



The impact of changing agricultural policies on Libyan agricultural performance

ALLAFI, Khaled A. Mousa

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The Impact of Changing Agricultural Policies on Libyan Agricultural Performance

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A thesis submitted in partial fulfilment of the requirements of
Sheffield Hallam University
For the degree of Doctor of Philosophy

2014

Abstract

Before the discovery of oil, the Libyan economy was characterized by its dependence on the agricultural sector. Oil was discovered in Libya in the late nineteen-fifties. High oil revenues provided an appropriate environment for the financing of all development projects, including agricultural projects. Although the agricultural sector in Libya has the financial and natural potential to make the agricultural sector more effective, it is confronted by many challenges that prevent its effective development. The Libyan government in the nineteen-seventies and the nineteen-eighties formulated policies for agricultural development through a set of medium-term plans (Three-year Plan 1973-1975, Five-year Plan 1976/1980 and Five-year Plan 1981-1986). However, by the middle of the nineteen-eighties there was a change in the mechanism of these programmes and plans, to a series of annual policies. The main aim of this study was to investigate the impact of changing agricultural policy approaches on Libyan agricultural performance. A mixed methods approach was adopted that rested on the triangulation of data from stakeholders (farmers and agricultural policy-makers) and policy documents relating to the performance of the Libyan agricultural sector. The findings indicated that the performance of the agricultural sector in the period of medium term plans, achieved higher contributions to the GDP. The performance of the agricultural sector declined when policies were developed on an annual basis and the government withdrew its subsidies for the sector. The distinguishing feature of the two approaches to agricultural policies in Libya is their diverse impact on the performance of the agricultural sector. In addition, the decline of oil prices in the eighties was the main reason behind the change in approach to policy. The main contributory value of this research is that it provides for the first time an in-depth understanding of how changing policies impact on the performance of the agricultural sector in Libya. It does this by drawing attention to the consideration of the impact of policy changes on agricultural sector development.

The research generates findings that are transferable to other developing countries especially those in northern Africa with economies similar to that of Libya; it also provides an opportunity for further research into other internal and external factors that impact on policy and agricultural development, especially in oil producing countries in Africa.

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List of Abbreviations

Ag GDP	Agricultural Gross Domestic Product
AOAD	Arab Organisation for the Agricultural Development
CAP	Common Agricultural Policy
DFID	Department For International Development
FAO	Food and Agriculture Organisation
GAAT	General Agreement on Tariffs and Trade
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GPC	General Planning Council
GPCT	General Planning Council of Trade
IFOAM	International Federation of Organic Agriculture Movements
IMF	International Monetary Fund
NCB	National Commercial Bank
M.LYD	Million Libyan dinar
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
<i>Per capita</i> of Ag GDP	An approximation of the value of agricultural goods produced per person
<i>Per capita</i> of GDP	An approximation of the value of goods produced per person
UNDP	United Nations Development Programme
WAC	Water Arab Council
WB	World Bank
WDI	World Development Indicators
WTO	World Trade Organisation

Acknowledgement

First, I would like to thank my Allah, because he granted me health and strength, which enabled me to complete this piece of work.

Second, I owe a great deal to Professor Ian Rotherham, who has been an ideal thesis supervisor, for his insightful criticisms, imaginative guidance, constructive criticism and patience throughout the development and writing of this thesis.

In addition, I would like to express my thanks to the rest of supervision team, Dr Paul Jones and Dr Andrew Jobling for their encouragement, suggestions, assistance and valuable comments.

A number of other people were of great assistance to me during my study.

I would like to thank all the staff of faculty of Development & Society in the University of Sheffield Hallam for their co-operation, assistance, in a beneficial academic environment.

My sincere thanks also to my teachers Dr Saleh Shueb, Dr Juma Ifhima, and Dr Faisal Shallof in the department of Agricultural Economics at the University of Omar AL-Mukhtar for their continuous help and encouragement during my study at Department of Agricultural Economics at the University of Omar AL-Mukhtar.

I would like to express my deep thanks to Dr Joseph Mensah-Ansah for his help and co-operation during the writing of the thesis.

I would like also to express my gratitude to Dr Shahad for her assistance

My special thanks also to my colleagues at Unit 9 in the Faculty of Development and Society for their time to discuss with me different matters and shared ideas about my work. I am also greatly indebted to my government for providing the opportunity for me to seek my higher education abroad.

Last, but certainly not the least, my sincere thanks to my all family and my friends for their endless moral support.

Dedication

This thesis is dedicated to my loving parents, who have waited for this moment more than anyone else has, even more than me.

I also dedicate this thesis to my brother Farag, who deserves to be where I am at this moment and without him, this thesis would not have been possible.

And also,

To my wife, who has devoted her life to foster me in a very merciful, sympathetic way and for her patience throughout my stay in the United Kingdom.

To my son Ziyad and my daughter Libya

To my brothers and sisters for their endless support

To the spirit of my friend " Hussein Dawood"

THE IMPACT OF CHANGING AGRICULTURAL POLICIES ON LIBYAN AGRICULTURAL SECTOR

CHAPTER ONE

1.0 Introduction

Agricultural policy has been the subject of major research and statements on the roles and importance of policies and strategies. An example is the Wilton Park Report (2008, p.12) which stated that *"Agricultural policies of national governments and the international community need to be consistent and long-term and enable robust and dependable markets to develop; policies need to recognise the reality of farming is critical at the national and international level"*.

Developing countries have the primary responsibility to ensure that their policies are sound and support sustainable growth. In many developing countries, agricultural development can have a particularly strong impact on improving economic opportunities and on poverty reduction (OECD, 2008).

Binswanger and Deininger (1997) indicated that agricultural policies in developing countries suffer from distortions which impact on the performance and effectiveness of policies. Krueger, Schiff, and Valdes (1991) detail these distortions: the absence of support and funding policies, the lack of appropriate infrastructure and the lack of agricultural research in developing countries

According to Apata (2010), oil exploration has led to several problems in the oil producing countries. Oil has impacted negatively on agricultural activity, which is shown in low agricultural income; and those in the agricultural sector move to non-farm activities to obtain an adequate standard of living.

Few of the benefits of oil can be seen in many of the oil producing countries which have undergone the experience of development. Oil has instead impacted negatively and led to a slow growth in other sectors; and it has reduced economic diversification. Furthermore, oil has also led to reduced performance and high levels of unemployment and poverty. In addition, the oil producer countries, particularly developing countries, which rely on oil as a major financier for development projects, suffer from corruption and have seen a significant spread of rent-seeking culture (Karl, 2007).

However, there is a lack of research on agricultural policy, its impact and importance to the development of agriculture in Libya (Azzabi, 2001). Few studies adopted a single perspective in assessing agricultural policies in Libya (El Messallati, 2007; El Shiakhi, 2009).

This chapter presents the research context on the impact of changing agricultural policies on Libyan agricultural performance. The chapter discusses the significance of the study, highlights the gap in previous research, provides a justification for the study and clearly identifies the aims, objectives, and research questions for the research.

There is no doubt that agriculture can contribute effectively to the GDP of a nation if decision makers adopt suitable agricultural policies. Agricultural policy according to Van Tongeren (2008) is policy concerned with the relations between agriculture, the economy and society. In this vain, Governments in European Union (EU) countries established the Common Agricultural Policy (CAP) as a system to harmonise the agricultural policies of all European Union countries (European Commission, 2012). The CAP combines a direct subsidy payment for crops and land, which may be cultivated with price support mechanisms. In addition, the EU has a clear strategy in terms of food safety (Gay *et al.*, 2005). The strengths of the EU's agricultural policy allowed European agriculture to be a major player in the world's agricultural markets. The fact that EU countries are able to produce large quantities of agricultural products, the diversity and the quality of those products has allowed the EU to become a major exporter of many foodstuffs making the EU the second largest food exporter globally, with agricultural exports worth around 72,553 billion EUR in 2006 (European Commission, 2008)

Likewise, since the nineteen-nineties, the USA government has introduced several significant agricultural policies. Danbom (1991); Keeney and Kemp (2002) noted that the USA government introduced agricultural policies that emphasized environmental concerns, organic and alternative agriculture and energy production. Other policies encourage farmers to use advanced

technologies to support production of commodities such as corn, wheat, rice and cotton.

1.1 Gaps in current research

Haraga *et al.* (1993), in comparing the agricultural policies of the EU and USA with those of Libya, noted that many factors influence the performance of the Libyan agricultural sector. These include government policies, the environment, social structure and culture, economic and technology. Most of these factors have not received much attention and researchers such as Haraga *et al.* (1993), Rahuma (1993), and Azzabi (2001) argue that it is important that researchers in the field of agriculture consider the influence of agricultural policies on agricultural production.

Although the issue of agricultural development and the role of agriculture in the countries' economies are still in the priorities of researchers and in the agenda of local and international organizations: whether in developing or developed countries. But there is a gap in the literature with regard to agricultural development and agricultural policies in oil- rich developing countries as Libyan case study

This research aims to fill this gap in research and to explore the influence of agricultural policy on the development of agriculture. It will thus contribute to existing academic knowledge and promote discussion making in this area.

Most existing research focuses on analysing the contribution of the agricultural sector to GDP, and there is very little research on agricultural policies in relation to agricultural production. Therefore, the main focus of this research is on the role of agricultural policies in enhancing or hindering agricultural development in Libya. This research explores the impacts of changing agricultural policies on Libyan agricultural performance. It considers whether they are effective in enhancing productivity and in achieving the government's stated objectives.

The research is unique in that it assesses the influence of changing the agricultural policies initiatives on Libyan agricultural performance and agricultural resources development, an area that is yet to receive adequate research attention. It attempts to identify the reasons for changes in agricultural

policy and the main challenges of implementing agricultural policies in the Libyan economy.

1.2 Research justifications

The justifications of this research are based on the following:

- Low contribution of the agricultural sector to Libya’s GDP
- An increasing food safety gap
- Inefficient use of agricultural resources
- Limited investment in agriculture

1.2.1. Low contribution of the agricultural sector to Libya’s GDP

El Ghonemy (1993) attributed the low contribution of the agricultural sector to Libya’s GDP to the lack of the clarity of agricultural policies and plans. According to the Arab Organization for Agricultural Development (AOAD), between 2000 and 2007 the average contribution of the agricultural sector to the GDP in Libya did not exceed 4%. This percentage is lower than that of other countries located in North Africa, as shown in Table 1.1 below.

Table 1.1 Contribution of agricultural sector to GDP in the North African countries as the average for the period between 2000 and 2007

Country	Libya	Egypt	Tunisia	Algeria	Morocco
% Contribution to GDP	3.90	14.52	11.66	9.00	15.56

Source: AOAD (1998-2008)

1.2.2 An increasing food safety gap

According to the Arab Organisation for Agricultural Development (AOAD) (2001), Libya has a shortfall in the production of most agricultural commodities such as wheat, barley and legumes, and attributes this to the implications of agricultural policies. Figure 1.1 compares Libya with other Arabic countries and shows that Libya comes last on the list of countries, which are able to bridge their food gap and achieve self-sufficiency.

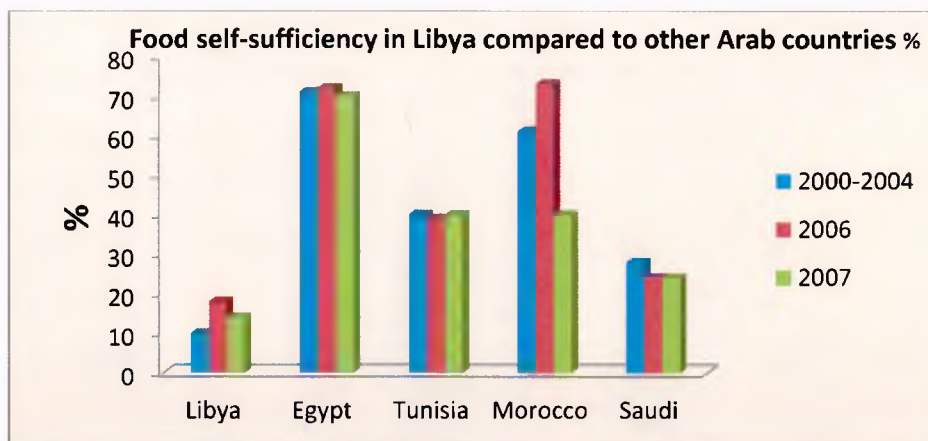


Figure1.1 Food self- sufficiency in Libya compared to other Arab countries

Source: AOAD (2007)

1.2.3 Inefficient use of agricultural resources

According to Heimlich (2003), agricultural resources include *inter alia*: land, water, biological resources and commercial input use. Although Libya has a large land area, water is a major challenge to agricultural production and needs to be used efficiently. In terms of agricultural land, although Libya has a total area of 176 million ha, only 2% of this area has been cultivated, while, 4% is suitable for grazing livestock. The Jebel Akhdar region and the Jifara are the biggest parts for arable land. Desert dominates the south with occasional oasis cultivation at Kufra, Sabha and Murzuk (Elmessallati, 2007).

It is difficult to determine the sizes of grazing land held by individual's farmers due to the tribal nature of land ownership, which allows group of people to own land, and due to the Islamic law of inheritance (Haraga *et al.*, 1993). According to Abdulgader (2005), Libya therefore has a great potential to increase land use for agricultural purposes and consistent policy may help achieve this.

In terms of water availability, Libya is facing huge challenges. For instance, the per capita share of renewable water in Libya is the lowest in the Arab region and will fall from 170 cubic metres in 1995 to about 70 cubic metres in 2025 (High Level Conference, 2008). The large deficit in the supply of water is compensated for by pumping excess ground water especially in coastal areas and the south for domestic and agricultural use. This has led to decreased water levels and high salinity. Access to underground water is capital intensive

with a high cost of drilling wells and pumping and the maintenance of water facilities.

1.2.4 Limited investment in agriculture

Heimlich (2003) stated that during the period 1970-1991, Libya spent 230 M.LYD annually on the agricultural sector. During this period, investments in the agricultural sector represented only about 17.7% of the total investment in all economic sectors in Libya (GPC, 2003). Table 1.3 below shows that though total investments in agriculture have been fluctuating, the figure has reduced over the years. This research seeks to find a relationship between changing policies on the dwindling investments and agricultural development in Libya.

Table 1.2 The average of total investments and agricultural investments (1973-2007) M.LYD

Year	Total investment	Agricultural investments	% of total investment
1973/1977	934.12	221.36	23.7
1978/1982	2206.04	389.5	17.7
1983/1987	1471.96	148.8	10.1
1988/1992	673.48	145.66	21.6
1993/1997	574.88	89.18	15.5
1998/2002	1612.2	117.94	7.3
2003/2007	5363.12	112.94	2.1

Source: GPCT (1993, 1996); Central Bank of Libya (1980-2008)

From the above, the agricultural sector in Libya faces challenges that need to be resolved through policy. There have been several policies to address these but the effects of these policies have barely been analysed. This research is important because it comes just on time after the Arab Spring revolution and the overthrow of Muammar Al Qaddafi's government, who controlled Libya for over 40 years. This situation creates an appropriate platform from which to evaluate the agricultural policies that have been introduced over the 40-year period. The challenges enumerated above need to be resolved through appropriate policies.

1.3 Research aims

From the above context, the aims of this research are:

1. To explore the issues of agricultural development in relation to government policy in an emerging economy, using Libya as a case study.
2. To examine the key factors that influences the development of the agricultural sector in Libya.
3. To study the changes and development in macro policies and their effect on agricultural policies in Libya.
4. To identify the key challenges of agricultural policy formulation and implementation in Libya.
5. To enhance understanding of the effect of agricultural policies in a developing country, and to make recommendations to improve formulation and implementation of agricultural policies.

1.4 Research objectives

The above aims of the research were achieved through the following objectives:

1. To identify key policy initiatives in Libyan agricultural development.
2. To examine agricultural development strategies and their effect on the Libyan agricultural sector.
3. To evaluate agricultural policies from the perspective of a sample of small farmers in Al Jabal Al Akhder Region.
4. To evaluate agricultural policies from the perspective of agricultural decision-makers.

1.5 The research questions

The development of agriculture depends mainly on policies, resources and opportunities. Particular emphasis is given to the important role of policy formulation and implementation on the development of agriculture in Libya. This research will address the key question:

Does the effective development of agriculture in Libya depend on approaches to agricultural policy formulation and implementation?

The other research questions that will help explore the main research question are:

- *Do current agricultural policies in Libya promote the effective development of the agricultural sector?*
- *What are the impacts of the changing agricultural policies on the performance of the agricultural sector?*
- *What are the effects of agricultural policies on the food safety gap in Libya?*
- *What are the challenges in implementing effective agricultural policies in Libya?*

Providing answers to these questions will help achieve the research aims and objectives.

1.6 Overview of literature

To achieve the research aims and objectives, literature on agricultural policy and its effect on agricultural development will be examined. The review of literature will cover new perspectives of the role of agriculture and will focus on small-scale farmers and rural development and the possible role of government policies in strengthening the role of agriculture in national development.

Agricultural policies and governance, the importance of farmer education, the engagement and empowerment of farmers in policymaking, the process of agricultural policy development and implementation, the 'Dutch disease', and other incipient issues that affects agricultural development will also be examined. Literature on the contribution of agriculture to economic growth and its ability to reduce poverty will be reviewed. Agriculture is an important source of economic growth through its contribution to the national economy. It provides investment opportunities for the private sector as well as being the main supplier of raw materials to the industrial sector (Christiaensen, Demery and Kuhl, 2010).

1.7 Overview of research methodology

To achieve the aims and objectives of the research, a triangulation approach was adopted in this study. The research methodology included quantitative and qualitative research techniques. Data collection strategies for the research included documentary data analysis, interviews and a questionnaire. The policy document scoping study was undertaken to identify critical issues and this was

followed by interviews with senior government officers. In order to sharpen the focus of the study, these interviews addressed key areas identified in existing government documents through the document analysis.

Farmers in the Al Jabal Al Akhder region of Libya were selected for the data collection element of this research. The researcher selected this region for several reasons. First, climatic conditions and natural resources endowment make this region one of the largest agricultural areas in Libya. Second, more attention has been paid to this region regarding agricultural policies and programmes due to the availability of agricultural lands and appropriate amounts of rain for agricultural activity (AOAD, 2004; El Shikhi, 2009).

The quantitative data gathered were analysed using the Statistical Package for Social Sciences (SPSS version 19). The qualitative data were analysed contextually and interpreted manually. The detailed methodologies are described in full in Chapter Four.

1.8 The Study's contribution to knowledge

This research sets out to enhance the understanding of changing agricultural policies and agricultural development in Libya.

- The research will build knowledge about agricultural policies in Libya and its importance.
- It will contribute to increasing the focus on the issues related to agricultural policy and its effects on agriculture in Libya
- The research may generate findings that are transferable to other developing countries and oil rich countries especially those in northern Africa with economies similar to that of Libya.

1.9 Research structure

This chapter presented the context and significance of research on the impact of changing agricultural policies on Libyan agricultural performance. The research aims/objectives and questions were outlined in this chapter. In order to contribute meaningfully to the research area, the remaining chapters of this study are structured as follows.

In Chapter Two, literature on the research subject is reviewed to provide a comprehensive background to the research. Chapter Three aims to establish an understanding of the influence of changing agricultural policies in Libya on the agricultural sector, through the results of a critical review of Libyan agricultural policies. This will enrich the literature with information about the history and the development of agricultural policy in Libya.

Chapter Four provides a detailed description of the methodology employed in this research, together with the design and implementation of the specific research approaches. Chapter Five presents the results of document analysis through an evaluation of the development of key variables related to agricultural performance in Libya. These include agricultural resources, the contribution of the agricultural sector to the Libyan economy, the food situation and the agricultural trade balance. Chapter Six presents the findings from the interviews and questionnaire. Chapter seven discusses the findings from the interviews and questionnaire survey in relation to literature reviewed in Chapters Two, and Three, and the documentary review in Chapter Five. Chapter Eight presents the conclusions from the research and suggests recommendations for future research into Libya's agricultural policy.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature relevant to research Aim 1, to explore the issues of agricultural development in relation to government policy in an emerging economy.

To examine critically the above research aims, the chapter has been structured as follows: the first part reviews literature on the role of agriculture in national development, its effects on economic development and poverty reduction. The chapter also reviews literature on the new perspectives of the role of agriculture and focuses on small-scale farmers, rural development, and the possible role of policies in strengthening the role of agriculture in development. The chapter examines literature on the relationship between rural development policy and agricultural policy. Agricultural policies and governance, the importance of education, engagement and empowerment in policymaking, the 'Dutch disease' issues of economic development were also examined. The outcome of these reviews will inform the discussion chapter.

These reviews of the literature were conducted with the Libyan context in mind and with the intention of enhancing understanding of the impact of changing agricultural policies approaches on agricultural sector performance in Libya. Agriculture as a human endeavour primarily deals with the production of food and raw materials for some industries for the production of goods to satisfy humankind. The development of agriculture in a country depends on agricultural policies adopted by that country which in turn depends on the needs and priorities of that country. Industrialization, for example, sometimes competes with agriculture for more attention. The issue of agricultural development at the expense of industrial development has been controversial to economists. Prebisch (1959), Higgins (1959) and Schultz (1964) believe that industrial development is more important than agricultural development. Importantly, the role of agriculture in economic development especially its contribution to the GDP in countries that have rich oil resources such as Libya has been questioned.

2.1 The role of agriculture in development

Agriculture as a term can be conceptualized from different perspectives. From the perspective of the farmer, agriculture is an everyday practice depended on to meet family needs and life expenses while the economist conceives of agriculture as an important sector, which should contribute to economic development and the Gross Domestic Product (GDP). According to Arumapperuma (2006, p.15), agriculture is a complicated term that includes many activities and actions: "the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.

The conceptual development of agriculture has been influenced by many factors such as labour productivity, land productivity, the environment and economics. These factors play an important role in directing the nature of agricultural development. In addition, the image of agricultural development can vary depending on the context and the circumstances surrounding the sector. In the early nineteen-sixties, a major development in the agricultural sector was witnessed, especially in the early stages of industrialization (Johnston and Mellor, 1961; Schultz, 1964). It was recognized that traditional agriculture could be transformed rapidly into a modern type through the adoption of science-based technology; this would thereby make a large contribution to overall national growth. Second, economists explicitly identified the strong growth linkages and multiplier effects of agricultural growth to the non-agricultural sectors. In addition, some economists argued that agriculture plays an important role in national development. Lewis (1954) suggested there are large sectors of the economy where the marginal productivity of labour is negligible, zero, or even negative. These labour resources are tied to the primary sector, and are a key ingredient for industrial growth, which will occur with growing the labour force in the primary sector. Hence, the primary sector plays an important, albeit passive, role in development. Johnston and Mellor (1961) identified some active roles that the agricultural sector plays throughout the development path:

- I) Agriculture provides food necessary for a growing economy, as food demand grows, although at a decreasing rate, with income (Engel's Law).
- II) Agricultural exports generate the foreign exchange necessary to import capital goods; agriculture, as the largest sector in less developed countries, is the only sector capable of generating the savings mass that the non-agricultural sector needs for capital accumulation.
- III) A growing agricultural sector creates a larger local market for the non-agricultural sector.

The above are still relevant for developing economies with a large primary sector. Successful industrialization is usually preceded by periods of dynamic agricultural growth. Although this does not suggest a causality link, countries that have embarked on a successful industrialization path, first experienced fast agricultural expansion, fuelled not by absorbing resources from the rest of the economy, but by rapid increases in productivity. Countries that have been able to industrialize without first having an agricultural expansion are the exception (Hong Kong and Singapore). It has been argued that agriculture has strong, direct forward linkages to agricultural processing and backward linkages to input-supply industries (Johnston and Mellor, 1961). It is known empirically that a large share of manufacturing in the early stages of development is agriculturally related (Pryor and Holt, 1999; Gemmell *et al.*, 2000). This multiplier effect is significant. Recent work on Latin America indicates that after accounting for these backward and forward linkages in an input-output framework, agriculture's share of the GDP is about 50 percent higher than official statistical estimates (Perry *et al.*, 2005).

With regard to the factors that impact on the role of agriculture in development Diao *et al.* (2006) determined the factors responsible for strengthening the role of agriculture in development in terms of agricultural conditions, natural resources, and geographic location in Ethiopia, Ghana, Rwanda, Uganda, and Zambia. Byerlee, Diao and Jackson (2005) identified the important factors for determining the role of agriculture in developed countries such as USA and

Europe countries in globalization, integrated value chains, rapid technological and institutional innovations, and environmental constraints.

On the other hand, Christopher *et al.* (2010) stated that the Nigerian government introduced a set of agricultural policies to ensure the activation of the role of agriculture, but the absence of adequate funding and proper implementation of these policies are reason for the reduction of the role of agriculture in Nigerian development.

Brandt, Rawski and Lin (2005), Sonntag *et al.* (2005) and Huang and Rozelle (2009) pointed out that the rapid development of non-agricultural sectors, especially the industrial sector, the institutional and structural changes in the Chinese economy as well as adjustment policies and economic reform played a significant role in increasing the role of the Chinese agricultural sector in development. WB (2007a) and Brooks (2010) stated that the productivities of agricultural labour and land through subsidies and support policies impacted significantly on the agricultural sector in Asian countries.

2.1.1 Agriculture and economic development

Worldwide, the share of agriculture contributing to GDP declined over the years until 2009, as shown in Figure 2.1 below. It is important to mention that the line in the figure below corresponds to International Standard Industrial Classification (ISIC) divisions 1-5 and represents forestry, hunting and fishing, the cultivation of crops and livestock production.

On the other hand, the productivity of cereal has been increasing (See Figure 2.2 below).

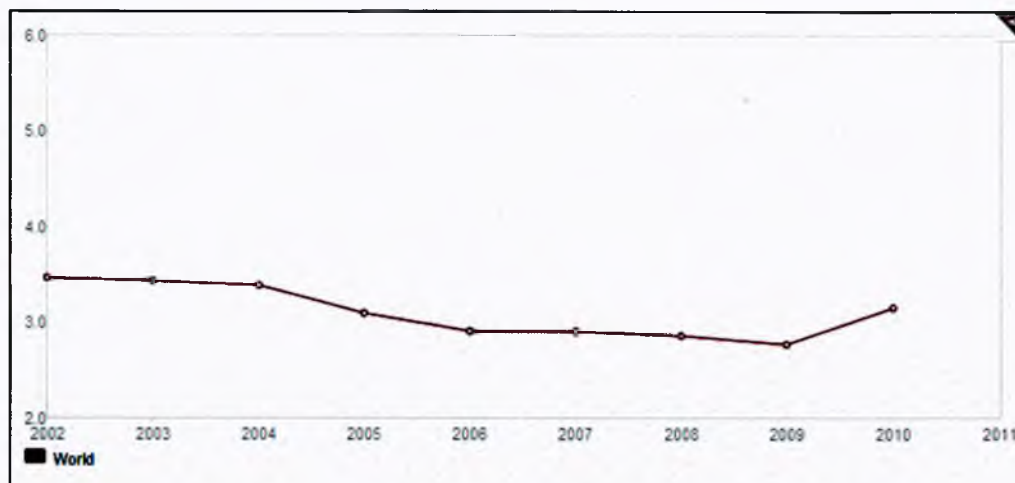


Figure 2.1 Agricultural contribution to GDP in the world

Source: World Bank (2012)

Hence, as agriculture becomes more successful, its importance declines in the overall economy. Other sectors in the economy such as the oil sector can be even more successful (World Bank, 2012).

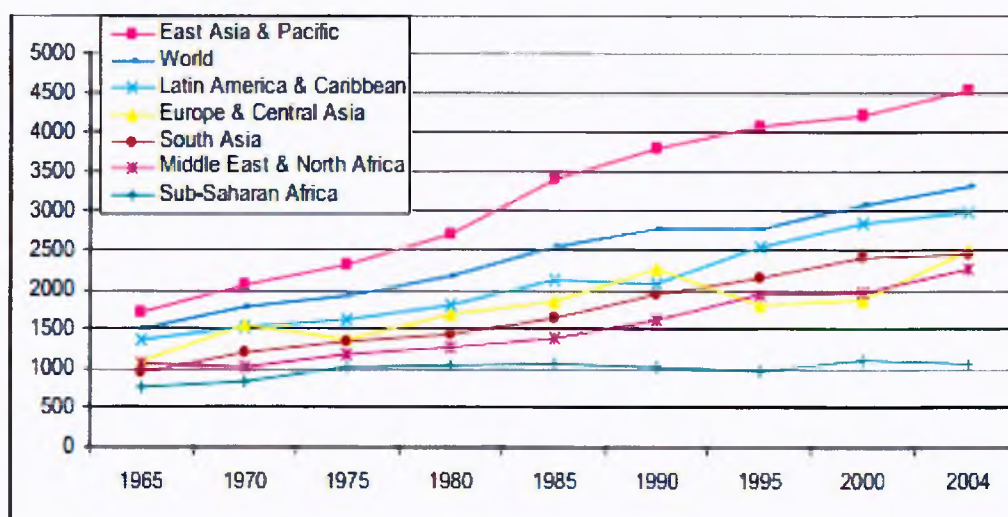


Figure 2.2 Average yield of cereals (kg per ha)

Source: World Bank (2010)

Accordingly, some nations such as Saudi Arabia, Libya and Kuwait are heavily dependent on oil exports to support their GDP. It has been noted that agriculture is no longer the centre of many Middle Eastern countries' economies. This is due to the discovery of oil, and the fact that many Middle Eastern countries now rely heavily on oil as a source of GDP (World Bank, 2008). Since 1982, agricultural activities have witnessed notable changes in

terms of the new role of markets, technological and institutional innovations, and new roles of the state, the private sector and civil society all characterize the new context for agriculture. Private entrepreneurs in extensive value chains lead the emerging new agriculture. These link producers to consumers and including many entrepreneurial smallholders supported by their organizations (World Bank, 2008). The production of staple crops and traditional export commodities also find new markets as it becomes more differentiated to meet changing consumer demands and new uses (for example, bio fuels) and benefits from regional market integration. However, agriculture faces large uncertainties that are difficult to predict and call for caution in managing the global food supply (OECD, 2010). An emerging vision of agriculture for development redefines the roles of producers, the private sector, and the state. Production is mainly by small holders, who often remain the most efficient producers, in particular when supported by their organizations. However, when these organizations cannot capture economies of scale in production and marketing, labour-intensive commercial farming can be a better form of production. Efficient and fair labour markets are then the key instrument to reducing rural poverty.

The state, through enhanced capacity and new forms of governance, corrects market failures, regulates competition, and engages strategically in public-private partnerships to promote competitiveness in the agri-business sector and supports the greater inclusion of smallholders and rural workers. In this emerging vision, agriculture assumes a prominent role in the development agenda (World Bank, 2008a; Byerlee, Janvry and Sadoulet, 2009; OECD, 2010). This leads to the question: 'does agriculture have an influence on increasing economic growth and reducing poverty?'

2.1.1.1 Agricultural development and economic growth

Although a few studies have suggested that linkage is dependent on the particular type of economic growth (Ravallion and Datt, 1996), more have identified the important factor as rising incomes of rural households during the early stages of development. These were seen as vital to providing a market for domestically produced goods and services (Hazell and Roell, 1983). The role of

agriculture in rural rather than national development was the primary focus of many economists during the nineteen-eighties and the nineteen-nineties (Hazell and Roell, 1983; Hazell and Haggblade, 1991). This rural perspective recognized that agricultural productivity growth stimulates rural non-farm growth, especially where infrastructure and the investment climate are already in place (Barnes and Binswanger 1986; Hazell and Haggblade, 1991). These growth-linkage effects have proven most powerful when agricultural growth is driven by broad-based productivity increases in economies dominated by small farms (Mellor, 1976). Small-to medium-sized farm households typically have more favourable expenditure patterns for promoting growth of the local non-farm economies (Mellor, 1976; King and Byerlee, 1978; Hazell and Roell, 1983). The strong growth linkage effects can lead to wider economic growth in many countries during their early stages of industrialization; a strategy labelled ADLI, that is, "agricultural-demand-led-industrialization" (Adelman 1984). The ADLI strategy stressed the central role of increased agricultural productivity in achieving industrialization through expanding demand for goods produced by domestic industries. Non-agricultural growth is found to have a greater impact on overall growth since other sectors typically grow faster than agriculture.

To sum up, there is no doubt that agriculture has a great influence in many countries' economic growth and it can be an important element supporting the GDP. However, there is a need to re-identify the role of agriculture and establish policies to meet those roles.

2.1.2 Agriculture and poverty reduction

Agriculture can be a basis for increasing growth and reducing poverty. Governments can benefit from agriculture in many ways if they pay more attention to policy and increase investment in agriculture. Agriculture is an important source of economic growth through its contribution to the national economy, providing investment opportunities for the private sector as well as being the main supplier of raw materials to the industrial sector (Christiaensen, Demery and Kuhl, 2010). 'Worldwide, agriculture contributes about 29% of the GDP and employs about 65% of the labour force. Two-thirds of the world's value added agriculture is created in developing countries' (World Bank, 2008,

p.3). The income source of the majority of the rural poor is from the agricultural sector and this makes agricultural production an important factor not only in food security.

Agriculture provides a livelihood for more than 86% of the rural population and provides employment for about 1.3 billion people, both small-scale farmers and landless labourers. Moreover, agriculture plays an important role in social welfare, where it is defined as “farm-financed social welfare”, especially in the presence of shocks in urban communities (Byerlee, Janvry and Sadoulet, 2009; World Bank, 2008). In developing countries, more than half of the population (3 billion out of about 5.5 billion people) live in rural areas; nearly 2.5 billion households work in the agricultural sector; and about 1.5 billion are smallholder households.

Notably, the drop in poverty rate in developing countries, from about 28% in 1993 to about 22% in 2002, was due to lower poverty rates in rural areas, which fell from 37% to 29%. The poverty rate in urban areas remained constant, at 13%, in the same period. About 80% of this decline in poverty rates in the rural areas was due to the improvement of living conditions. Thus, agriculture plays an essential role in reducing poverty across the world. Growth or increase in the contribution of the agricultural sector to the GDP is about two-thirds more effective in reducing poverty than growth in non-agricultural sectors (World Bank, 2008; OECD, 2008; OECD, 2010).

Agriculture can have a negative effect on the environment in consuming a large amount of water, leading to water scarcity, underground water depletion, agrochemical pollution, soil exhaustion, and global climate change, and accounting for up to 30 percent of greenhouse gas emissions. However, it may, contribute to preserving biodiversity (World Bank, 2008; Byerlee, Janvry and Sadoulet, 2009; Van Donge, Henley and Lewis, 2012) and supports human populations. Pica, Ciamarra and Otte (2008), Van Donge, Henley and Lewis (2012), and OECD (2010) stated that the contribution of agriculture to poverty reduction differs from country to country.

2.1.3 Effectiveness of agriculture for development

Literature on agriculture provides different types of tools to measure the effectiveness of using agriculture for development. Household assets are major determinants of the ability to participate in agricultural markets. The securing of livelihoods in subsistence agriculture has been largely successful in meeting the world's effective demand for food. Food prices in global markets may reverse their long-term downward trend, a prediction that creates rising uncertainty about global food security. Climate change, environmental degradation, increasing competition for land and water, higher energy prices, and doubts about future adoption rates for new technologies all present huge challenges and risks that make predictions difficult (OECD ;2010). Those challenges centre on how to:

- Make smallholder farming more productive and sustainable
- Improve price incentives and increase the quality and quantity of public investment
- Make product markets work well
- Improve access to financial services and reduce exposure to un-insured risk
- Enhance the performance of producer organizations
- Promote innovation through science and technology
- Make agriculture more sustainable and a provider of environmental services (Byerlee, Janvry and Sadoulet; 2009).

2.1.4 Agriculture and rural development

Agriculture is given great attention in rural development studies where improving small farmer's incomes and productivity leads to poverty reduction. Historical studies related to agriculture indicated to a negative relationship between productivity and poverty (WB, 2007a). Zhou (2010) pointed out that East and South Asia have seen growth of cereal productivity during the Green Revolution, which led in turn to reduction of poverty in those regions. According to WB (2007a) the poverty incidence (percentage of people living on less than 1 dollar a day) decreased from about 50% to around 10% in East Asia and 32% in

South Asia from 1981 to 2004. In Africa, approximately three-quarters of the people live in rural area, and are engaged in variety of agricultural activities, such as small-scale farming, livestock production, fishing, hunting, artisan mining and logging (WRI, 2005). Development of Sub-Saharan Africa has not seen remarkable changes comparing to East and South Asia. Small farms have multiple roles, where they have the ability to achieve the goals of agricultural policies, such as social, economic and environmental goals. Small farmers have responsibility to contribute to provision of food, development of agricultural crops and practice of agricultural diversity through the ages, not to mention the contribution of small farms in poverty reduction and food security. Ong'wen & Wright (2007), Raghbendra, Chitkara and Gupt (2000) and Singh Kumar and Woodhead (2002) stated that the small farm is usually more efficient than the large-scale agricultural project. Some economists have also pointed to the inverse relationship between farm size and productivity. Moreover, small-scale cultivation plays an important role in promoting and stimulating local economies; in income generation in the markets; and it creates local markets in addition to developing a strong demand for local products (Sen, 1999).

The changing of agricultural policies, particularly in industrial countries in the second half of the twentieth century, led to dramatic changes in agricultural sector structure. According to Weiss (1999), these changes in agricultural structures also contributed to equity within agriculture, productivity and efficiency of farming, a demand for government services and infrastructures, and the well-being of local communities. Monitoring the agricultural policies and supporting policymaking requires analysing the relationship with the performance of farms (Poppe and van Meijl, 2004). In addition, according to Woodhouse (2010), the changes in the food trades and agriculture, which have been acquired as a result of globalization and liberalization, have raised serious debates about the capabilities of small farmers to participate effectively in the development of the economy.

A few scholars, such as Byres (2004) and Dyer (2004), agreed that the reason smaller farms present higher land productivity is unrelated to efficiency, but rather to the exploitation of family labour. Woodhouse (2010) questioned their conclusion and stressed that labour productivity should receive greater attention

and the assumption that increases in land productivity will be accomplished by enhancing labour productivity should be re-evaluated. He added that 'Investment is therefore key to raising labour productivity and, logically, investment in agriculture will only take place if farming can pay a wage higher than the opportunity cost of labour' (p.443). Woodhouse (2010), in his discussion about productivity, raised some important questions. First, does the current productivity of labour in the sector match the cost of labour generally? Second, does the investment of extra labour lead to higher profit? Woodhouse gave a negative answer to the first question, using Africa as an example. In his response to the second question, he stated that 'in the absence of a significant shift in productivity and/or much higher agricultural prices, more labour-intensive farming will further reduce labour productivity, signifying an even lower 'labour wage', tantamount to a form of agricultural involution'. (p.443). On the other hand, Ashley and Maxwell (2001) and Hazell *et al.* (2007) argued that large-scale farms are more effectively able to respond to rapid changes in the sector because farmers on such farms are highly educated and are therefore more able to adopt modern technologies and handle the increased demand for capital and mechanization than small scale farmers. Table 2.1 below shows the comparison between transaction costs in small and large farms.

It can be argued that many studies addressed the role of agriculture in development in different countries. Examples are Johnston and Mellor (1961), Pryor and Holt (1999), Cabral and Scoones (2006), Van Huylenbroeck, Lauwers, and Fernagut (2006), Diao *et al.* (2006), Byerlee, Diao and Jackson (2005) Brandt, Rawski and Lin (2005), Sonntag *et al.* (2005), Huang and Rozelle (2009), Arumapperuma (2006), and Gemmell, Lloyd and Mathew *et al.* (2000). Some of these authors also aimed to investigate the nature of how the role of agriculture depends on the degree of growth. However, they agreed that there is no specific standard for determining this role because of the different nature and degree of growth in each country and the different agricultural policies applied in each country.

Table 2.1 Comparison between Transactions Costs in Small and Large Farms

Statement	Small Farms	Large Scale farms
Unskilled labour supervision	√	
Lack of motivation	√	
Lack of universal market information	√	
Food purchases and risk (subsistence)	√	
Skilled labour		√
Market knowledge		√
Technical knowledge		√
Inputs purchase		√
Finance & capital		√
Land		√
Output markets		√
Product traceability and quality assurance		√

Source: Hazell *et al.* (2007)

2.2 Agricultural policies

According to OECD (2008), agricultural policy represents a set of procedures, methods and reforms, which are adopted in the agricultural sector to achieve specific goals. Agricultural policy is a way to organize and use economic resources to achieve the objectives of society in the agricultural sector. These policies use a variety of economic concepts to explain the behaviour of economic resources in the agricultural sector. According to the Wilton Park Report (2008), “Agricultural policies of national governments and the international community need to be consistent and long-term and enable robust and dependable markets to develop, policies need to recognise the reality of farming is critical at the national and international level” (p.12). Ellis (1992) stated that agricultural policy is a part of the economic policy of the state, which is applied to the agricultural sector. This research seeks to find out how economic policies in Libya shaped the country’s agricultural policies.

Agricultural policy has some key principles and strategies for agriculture: policies should focus on these principles to guide policy formulation.

Furthermore, the principles should serve as conditions for the procedures and as tools, which seek to achieve the objectives of agricultural policies. According to Norton (2004), the fundamental principles for the development of agricultural strategy in the end can be divided into five principles, which are mainly based on economic, financial, social, institutional and environmental sustainability. Some significant objectives of agricultural policy should be to:

- Enhance the principle of equal opportunities among individuals.
- Increase the efficiency of economic agricultural resources.
- Increase the income of farmers and increase the contribution of agriculture to national income.
- Understand the economic welfare of the community.
- Increase the rate of growth in the agricultural sector to increase its contribution to total local production.
- Create integration between agriculture and other sectors.
- Encourage production and provide opportunities for farmers to obtain loans and subsidies (Norton, 2004).

The agriculture-for-development agenda presents two challenges for implementation. One is managing the political economy of agricultural policies to overcome policy biases, under-investment and mis-investment. The other is strengthening governance for the implementation of agricultural policies.

2.2.1 Agricultural policy and development

Rural development has a large number of connotations and the term “rural development policy” is frequently used to refer to a wide variety of government interventions (WD, 2008). In some countries, rural development policy may be used interchangeably with regional policy, particularly when rural development is viewed to be primarily an issue of economic growth. In such cases, the policy focus may extend far beyond agriculture or related sectors to issues such as the provision of infrastructure and public services (Wilfred and Edwige, 2004).

In other countries, rural development policy is viewed from a more agro-centric perspective, in terms of expanding the contribution of agriculture to the local

economy. These approaches are not necessarily inconsistent, but they influence views on the set of policies that fall within the domain of rural development and the range of issues they are intended to address.

The OECD has examined a number of case studies of rural development policies (Australia, Canada, the European Union, Japan, Norway, Switzerland and the United States), focusing particularly on their linkage to agricultural policy (OECD, 2009b). The following points illustrate some interesting findings:

a) **The linkage between rural and agricultural policies:** In some countries (e.g. Australia, the United States), rural development policies and agricultural policies are largely separate. In others, they are closely linked (e.g. Norway).

b) **The degree to which policies have an agricultural focus:** In Japan, the primary emphasis is on agriculture as a vehicle for rural development. In others (e.g. Switzerland, the United States), the focus is broader and includes policy measures to promote the development of regional infrastructure, such as roads or housing).

c) **The focus within agriculture:** This varies considerably. In some countries, the primary emphasis is on improving the business skills of farmers to help them to adjust and adapt to external economic pressures or other difficulties, including natural disasters or climate change (e.g. Australia, Canada and the United States). In others, there is a greater breadth of coverage to include farm investment, competitiveness of the agro-food industry, environmental management, animal welfare, food quality and food safety, the preservation of cultural heritage, and maintaining agriculture in less-favoured areas (e.g. the EU).

d) **The responsibility for policy:** In countries such as Canada and Switzerland, this is largely devolved to sub-national governments, i.e. "bottom-up". In other cases it is largely controlled from the centre, i.e. "top-down" (e.g. the EU, Japan, and Norway).

e) **Funding:** In Japan and Norway, this is largely achieved through central government expenditures. In others, it is a mixture between central and local governments (e.g. Australia, the EU and Switzerland). In some cases, there are efforts to involve private organisations, or to create public-private partnerships using measures such as loan guarantees (e.g. Australia and the United States).

2.2.2 Stakeholders and policy reforms

Stakeholders are those who possess the rights or interests in a system, for example, those who are concerned about the future of a system. For an organization, stakeholders are any group or individual who can affect, or is affected by, the accomplishment of the organization's aims and actions Hemmati (2002). These could be individuals, communities, social groups or organizations. Stakeholder Analysis (SA) is a methodology utilized, for example, to make institutional and policy reform process easy by accounting for, and often including, the needs of those who have a 'stake' or an interest in the reforms under consideration. With information on stakeholders, their interests, and their aptitude to resist reform, advocates can select how best to accommodate them, thus ensuring that policies adopted are politically realistic and sustainable (Robb, 2003). Stakeholder Analysis has four chief attributes, which are the stakeholders' position on the reform issue, the level of influence (power) they hold, the level of interest they have in the specific reform, and the group/coalition to which they belong or can reasonably be connected with. Timing is an essential factor in the performance of Stakeholder Analysis to guarantee the value of the results for policy formulation. Hemmati (2002) asserts that multi-stakeholder processes aim to bring together all key stakeholders to contribute in a new form of communication, decision finding, (and possibly decision-making), on a particular issue.

Poverty and Social Impact Analysis (Robb, 2003) is correlated to most policy reform processes, but its application in agricultural reforms is vital. The high frequency of poverty in rural areas and the generally vulnerability of the livelihood strategies of the rural poor make it important to ensure that distributional impacts are consistent with poverty-reduction goals. The World Bank's rural strategy (World Bank, 2003b) calls for increasing the profile of rural development efforts by 1) fostering an enabling environment for broad-based

and sustainable rural growth 2) enhancing agricultural productivity and competitiveness 3) fostering non-farm economic growth 4) improving social well-being, managing and mitigating risk, and reducing vulnerability and 5) enhancing natural resource management sustainability. To achieve these targets, there must be significant policy reforms with trade policy. It is necessary to remove obstacles to effective market operations, promote markets, improve agricultural financing, introduce sound food security policies, and design safety nets that directly protect poor rural dwellers from shocks.

Over the past 20 years, many countries have embarked on considerable reforms of the agricultural sector with diverse goals, among others, subsidizing urban consumers, generating revenue, and stabilizing the economy. Mostly, the reforms have had many favourable results, but have not yet yielded the desired results in terms of poverty reduction and food security. This is because their impacts have been limited by partial implementation and structural constraints (Deininger, 2005; Gardner, 1996; Lundberg, 2005). Agricultural reforms are an important part of the Poverty Reduction Strategy Papers (PRSPs) in most of the countries for which these strategies have been devised. Agricultural reforms can bring about significant poverty reduction but to be successful, they must consider the critical socio-economic, political, and institutional characteristics of the rural poor (von Braun *et al.*, 2003). There still is a gap between existing PRSPs, the agriculture and rural development strategies followed by the countries, and the desired impacts of the proposed sector reforms. The drivers of reform and the types of reforms in the agricultural sector are also important to consider. Agriculture and rural reforms include sector-wide policies in pricing, marketing and research; extension institutions and policies; and specific sub-sector actions to address problems.

According to de Janvry and Sadoulet (2002), as local and global conditions change, the performance of these institutions may be affected. For example, traditional land tenure systems may function perfectly well while population densities are low, but may be less effective as they increase. Research by Lundberg (2005) and Deininger (2005) discusses relevant conceptual and methodological issues related to the analysis of agricultural market and land reform. Both papers outline the economic factors that influence the reform

programmes in the agricultural sector, the different policy reform alternatives, as well as some of the economic tools that have been used to analyse the impacts of the reforms. In the case of agricultural market reforms, Lundberg (2005) indicates that, in many cases, decision makers and stakeholders are unaware of the magnitudes and distribution of potential reform impacts. Given the high stakes associated with land policy reform, it should focus on social outcomes, social processes, and power relationships, in addition to economic factors and outcomes. Engaging stakeholders in policy formulation has gained significance due to the importance of farmers in agricultural policy, especially in developing countries. This was confirmed by Eliasi, Aubin and Sunga (2009): *“One of the reasons for the past failures encountered in the support of African agriculture lies in the top-down nature that characterised the policy making and implementation process, these rarely included effective consultations with farmers, particularly small-holder farmers, despite the fact that they constitute the majority of stakeholders”* (p3).

2.2.3 Governances and decision making

According to Swinnen (2010), agricultural policy suffers from distortions relating to the mechanism of decision-making. The recent period has seen an increase in studies, which have investigated the effects of political regimes and policy-making; Birner and Resnick (2010) stated, *“with respect to policy decision-making, interest group frameworks have been at the cornerstone of most political economy approaches”*. Therefore, the policy approach that has been followed by some interest groups might not be consistent with the objectives of economic policy. Birner and Resnick (2010) mentioned this, indicating that the voices of all stakeholders should be heard. However, in authoritarian regimes, decisions go to the more powerful interest groups, where policies are devised to further their interests. The most agricultural protection, on the other hand, is to be seen in the liberal countries; with a spread of agricultural support policies witnessed in those African countries, which have seen the development of democracy.

Of course, the most important interest group in the agricultural sector, especially in developing countries, are farmers. The World Bank (2011) indicated that 75%

to 78% of the poorest people in the world depend on farming, pastoralism and forestry, all of which can be considered under the term agriculture.

Participation as stakeholders increases the possibilities for smallholder farmers and the rural poor to raise their political voice. The private agri-business sector has become more vibrant, especially in more urbanized countries and those undergoing transformation. Yet these improved conditions alone do not guarantee the successful use of agriculture for development purposes and objectives. Smallholders must have their voices heard in political affairs, and policy makers and donors must seize the new opportunities (World Bank, 2008). Market failures are pervasive, especially in the agriculture-based countries, and there is a need for public policy to secure desirable social outcomes. The state has a role in market development, providing core public goods, improving the investment climate for the private sector, and practising good natural resource management by introducing incentives and assigning property rights. Strengthening the capacity of the state in its new roles of coordinating across sectors and partnering with both the private sector and civil society is urgently needed if the agriculture-for-development agenda is to be implemented successfully (FAO, 2004a; World Bank, 2008; Van Donge, Henley and Lewis, 2012).

Therefore, supporting agriculture and empowering, educating and engaging the farmers in the making of policy that affects them can be key to reducing poverty and securing people's right to food (Fraser, 2009; World Bank, 2011a). Dyer, Boucher and Taylor (2006) and Narayan (2009) stressed that empowering farmers and engaging them in decision-making can be a very effective means of developing support for given agricultural policies. Narayan (2004) stated, "Poverty reduction on a large scale depends on empowering the central actors, those who are most motivated to move out of poverty – poor people themselves". He added that this requires a change in attitude from all actors; and that farmers must be encouraged to take responsibility for their own futures.

Schmerler (2006) argued that the rise of multinational retailers, seed and fertiliser companies, distributors, and development agencies, and in many cases the policies of governments, have gradually eroded farmers power to

control the way they manage their farms and therefore their livelihoods. The World Bank (2011a) indicated that in most African countries, agricultural policy documents have no clear vision of what empowerment might include and to what extent the development organisations' conceptions of empowerment fit in with an empowerment model that looks for significant changes in the social and political position of the farmers. Different conceptions of empowerment may mean radically different development outcomes for poor rural families targeted by development projects. Education is another key principle that enables farmers to participate in decision-making. However, educational needs can vary depending on a farmer's capabilities, skills and gender. Rogers (2003) saw that well-educated farmers are a good starting point for strong, adaptable food production and agricultural sectors. Since 1982, Jamison and Lau (1982) have stressed the important relationship between investment in basic education and in advisory services.

2.2.4 Assessment of agricultural policies

Recent years, according to Gardner (1992), have witnessed a remarkable plurality and diversity in the methods employed to evaluate policy; however, there has yet been no real assessment of agricultural policies in Libya. Gilg (1996) indicated that there were three main approaches to assessing agricultural policies. Firstly, scientific method/logical positivism that is based on empirical data collection; secondly, structural analysis which is based on the interplay between structural forces; thirdly, the post-modern approach which can be defined as a human agency (behavioural) approach. The determining feature of a specific approach is usually the way data is collected and used. For further clarification, traditional meta-narrative or empirical analyses rely mainly on the assumption that policy already has an effect. Thus through statistical analysis and econometrics we can assess the impact of policies quantitatively, and identify the beneficiaries and losers of these policies. Structural analyses depend on certain concepts such as political economy.

The post-modern approach is based on the significance of episodic and peripheral events. It relates these to social tradition, institutions and interest groups related to agriculture. It is usually focused on what is known as 'the dominance of agriculture' and the challenges regularly faced by agriculture,

especially the policy of collective consumption. The post-modern approach provides a kind of simulation and offers different scenarios for intervention in the agricultural sector; for example, it might simulate what will happen to agricultural prices if support is cancelled. FAO (2009) identified a set of quantitative models used in the analysis of the impact of policies. These are:

- 1) Micro-accounting Frameworks,
- 2) Value Chain Accounting Frameworks;
- 3) Single Market Equilibrium Models;
- 4) General Equilibrium Models;
- 5) Single Market Equilibrium Models;
- 6) Integrated Micro-macro Approaches.

However, both quantitative and qualitative analysis can be used to evaluate the impact of policies. Mixed methodology, based on data from key stakeholders, may include non-numerical information from qualitative analysis or quantitative data collected. Comprehensive evaluation of policies and their impacts is often used in identifying solutions and alternatives. According to Fairouz (1998), these approaches are not mutually exclusive, although some of their proponents have erroneously claimed that only their perspective is valid. In the present study, the researcher has adopted a hybrid methodology that combines a meta-narrative, and scientific method/logical positivism, which is based on empirical data collection, as well as integrated micro- and macro-analysis through some indicators at macro and micro levels. Such an approach allows the researcher to analyse direct and indirect effects of the policies and it gives results that are more comprehensive. This is particularly with regard to government initiatives in the areas of agricultural development, poverty reduction, income distribution and the reactions of farmers to agricultural policies.

2.2.5 Agricultural policies in developing countries

Developing countries have the primary responsibility to ensure that their policies are sound and support sustainable growth. In many developing countries, agricultural development can have a particularly strong impact on improving

economic opportunities and on poverty reduction (OECD, 2008). Investment in agriculture, including agricultural research, extension and education, can stimulate a much-needed increase in productivity. Increasing employment and incomes derived from agriculture can also have multiplier effects, increasing demand for non-agricultural goods and services (OECD, 2008).

Deficiencies that affect agriculture include technological capacity, transport, storage and marketing infrastructure, as well as the legal framework. Exploitation of technological advances in agriculture would increase productivity and help it to comply with new standards. Poor people should have increased access to productive resources. Rural financial markets and institutions need support so they can provide easier access to credit. These policies are ultimately the responsibility of developing country governments.

Binswanger and Deininger (1997) indicated that agricultural policies in developing countries suffer from distortions which impact on the performance and effectiveness of policies. Krueger, Schiff, and Valdes (1991) stated these distortions in more detail. This was through the absence of support and funding policies, the lack of appropriate infrastructure, the lack of agricultural research in developing countries, and because developing countries imposed direct taxes and indirect fees on the agricultural sector. These include import duties on agricultural inputs, which led to higher production costs, and the loss of competitiveness compared with developed countries such as the United States, which increase support for farmers to very high levels.

To improve policy coherence for development, developing countries, according to OECD (2010) and World Bank (2008), should:

- Create a supportive environment for development by continuing to tackle poor governance, corruption, weak public administration and conflict and by providing rural people with access to resources such as land and water.
- Step up public investments in rural infrastructure and agricultural research to increase farm productivity and competitiveness; identify and promote other rural initiatives that could also contribute to decreasing rural poverty.

- Develop consistent and credible economic policies, which encourage private investment and the creation of farm and off-farm employment

2.2.6 Agricultural policies in oil rich developing countries

In this section, the researcher aims to provide a general perspective on the economy of the Arabic region. Much attention is paid to the countries, which have similar contexts to Libya. To start with, it is useful to provide an overview on the state of agriculture in the Arabic countries.

Arab countries are those twenty-two countries located geographically between longitude 16.5° west and longitude 60° east and from the equator to the south to latitude 37.5° north. These countries occupy the area between the sub-Saharan Africa to the south and the Mediterranean and Turkey to the North and between the Arabic Gulf to the East and the Atlantic to the West. See Figure 2.5 for an illustration of the Arabic region.



Figure 2.3 Geographical locations of Arab countries

Source: Water Arab Council (2009)

According to UNDP (2007) and World Bank (2007a), the population of Arab countries is about 350 million, while the average annual rate of population growth is about 2.6%, which differs among countries. The urban population represent about 80% of the total population in Bahrain, Jordan, Kuwait,

Lebanon, Libya, and Saudi Arabia and less than 40% in the Comoros, Somalia and Yemen. The average GDP of the Arab countries is about 1,043 billion dollars, and *per capita* of GDP is very high in oil-producing countries. The area of the Arab countries estimated to be about 14 million square kilometres; 87% of the total area is desert and scarcity of land; renewable water resources are a dominant feature in most Arab countries, while the agricultural sector consumed around 87% of the available quantity of water (UNDP, 2007). Arab countries can therefore be classified as:

- 1- Countries with surplus capital and a low population density and poor performance of economic activities in non-oil sector (Saudi Arabia, Kuwait, other Gulf States, and Libya).
- 2- Countries with high population density, with severe shortage of capital resources and characterised by a traditional agriculture and industrial base (Egypt, Morocco, and Syria).
- 3- Countries with large oil revenues and with a high population density, where agricultural and industrial activities are important (Iraq, and Algeria).
- 4- Countries with low population density, severe shortage in capital resources, agriculture and industrial activities (Lebanon, Jordan, and Yemen) (WAC, 2009).

The economies of many Arabic countries are based on agriculture. The Arab Organization for Agricultural Development (AOAD), which was established in the nineteen-seventies, has stated that Arabic policy makers should consider the following before establishing any agricultural policy:

- The need to develop natural resources, especially water resources.
- The need to adopt new technologies relating to agriculture.
- The need to improve the effectiveness of farmer organizations' support for agricultural production and marketing activities.

- The need to provide incentives to attract Arab agricultural financial resources for investment in a suitable agricultural production environment.
- The need to secure peace, socio-economic stability and food security in Arab rural communities.
- The need to increase the competitiveness of Arab agricultural products in the markets (AOAD, 1990).

However, the “Arabic Spring” has caused a major change in political dictatorship regimes that had dominated Arabic countries and impacted negatively on the progress of all sectors including agriculture. Hence, the new governments need to work across two parallel lines: firstly to create new policies; and secondly, to evaluate and repair the damages accrued by previous regimes. There are similarities to some extent between Libya and Saudi Arabia: the latter has the same climatic conditions and its economy depends on oil (IMF, 2008).

Al Obaid (1987) stated that Saudi Arabia’s economy relies on its oil but that the country has become aware of the importance of using oil revenues to develop the rest of its economic sectors. Saudi Arabia has implemented many policies and programmes to increase agricultural productivity. Problems exist in the agricultural sector in the areas of water and land. Although there was an expansion in agricultural production at the beginning of the nineteen-seventies, it has become imperative to strengthen water systems, use modern irrigation systems, encourage farmers to use agricultural technology, and to educate citizens on the importance of the optimal utilization of scarce natural resources.

Fairooz (1998) found that the development of the agricultural sector had been the focus of United Arab Emirates (UAE) economic policies. The study showed that there had been an improvement in the agricultural sector of UAE since independence, but that this did not happen until after state had made a number of interventions. These included the reclamation of new agricultural lands, subsidies, price support, marketing, education and research policies. The progress of agricultural development is usually accompanied by some constraints, such as water shortages.

Fairooz (1998) concluded that the most pressing problem facing the agricultural sector in the UAE is the weak infrastructure in the sector and lack of funding. He pointed out that funding from both the public and private sectors would be beneficial to the success of achieving agricultural policy targets in the UAE. Although the Gulf Cooperation Council (GCC) countries have been able to achieve stable progress in terms of agricultural growth, a number of significant challenges confront the GCC authorities in the area of food security. According to the National Commercial Bank (2010), the GCC have been exposed to external shocks due to higher prices of food imports for the following reasons:

1) Agriculture is not seen as an important element in the economies of Gulf countries and the agricultural sector has a low value-added character; 2) Limited agricultural potential; 3) The change in the pattern of food demand; 4) High cost of domestic production, especially grain; 5) Population growth and increase *per capita* of consumption.

Therefore, the GCC tended to invest in foreign agricultural land for food security and bio fuels. The GCC became active participants in this field, as is the case with China, which encourages companies towards agricultural investment. Another significant undertaking is the sponsorship of developing countries, which are characterized by low production costs. The GCC governments make direct investments in these countries and, in addition, assist the private sector to take possession of agricultural land in these countries; an example of which is the case of the King Abdullah Initiative for Saudi Agricultural Investment Abroad (Haralambous, Liversage and Romano, 2009). In the search for rich agricultural land and the availability of suitable climatic conditions for the growing of required crops, geographical location constituted the centre of attention for investors in the GCC. Therefore, Africa was an appropriate environment for investments; the GCC concentrated investment in the North and East of Africa and the south of Asia, rather than in the United States and Europe. These major exporting countries, because of distance, would involve excessive transport costs. According to NCB capital, (2010) Saudi Arabia and the UAE have now emerged as leaders in acquiring land in Third World countries. Media reports suggest that the two, taken together, now hold 2.8 m/ha primarily in Sudan,

Pakistan, Turkey, and Indonesia. Again, Saudi officials have reportedly had talks about investments in Australia, Brazil, Egypt, Ethiopia, Kazakhstan, South Africa, and Vietnam. Moreover, the private sector has been supported by the GCC in investing in land overseas. Recipient countries have welcomed these investments, which lead to the transfer of modern technology, development of agricultural sector, creation job opportunities, and the development of the transport infrastructure and logistics services. International organizations such as the Food and Agriculture Organization have encouraged this type of integration, which benefits both parties.

To sum up, many researchers (Krueger, Schiff, and Valdes, 1991; Binswanger and Deininger, 1997; WB, 2007a; EU, 2008; Brooks, 2010) discussed the importance of agricultural policies and their role in improving the performance of farmers. Attention was primarily paid to those policies, which relate to the daily practices of farmers such as financing, support, subsidies and pricing policies. The results of these studies proved that such policies could differ qualitatively and quantitatively from country to country according to the importance of the agricultural sector and its position within a given economy.

2.2.6.1 Oil discovery and development of agriculture

The discovery of natural resources, above all oil, has had a profound impact on the world economy. Sachs and Warner (1999) indicated that higher cyclical fluctuations in national incomes result when countries depend highly on natural resources. Whilst revenue flowing from other kinds of resources, such as agriculture, courses throughout the economy, production and the pattern of revenue created by the existence of oil and minerals, which are the main kinds of natural resources, gives rise to a very different outcome. Matsuyama (1992) devised a formal model known as the 'linkages approach' to analyse the role of natural resources in development. He showed the role played by agriculture in a model where manufacturing is demonstrated through learning-by-doing. He also indicated that throughout the reduction of learning-induced development of manufacturing, the development rate of the economy becomes low because the economy shifts away from manufacturing and towards agriculture.

Additionally, several challenges arise. These have become known as the 'Dutch disease'. Martin and Subramanian (2003) define the Dutch Disease as a correlation between natural resources and economic growth; it reflects the negative impact of natural resources on the whole economy due to an inefficient macro policy unable to cope with the huge cash flows that result from the discovery of a natural resource. As mentioned above, this term has commonly been used since the crisis of the Netherlands during the nineteen-seventies and the nineteen-eighties. The "Dutch disease" is explained in terms of a re-allocation of resources across sectors and a structural transformation, rather than as a dynamic growth process. The resource boom is expected to affect the economy in two ways: the spending effect and the resource movement effect. According to Feltenstein (1992), during the past twenty years, most countries that have experienced an economic boom or the discovery of a natural resource have been exposed to the disaster, in most cases experiencing a large decline in exports from other sectors of their economy. For example, in an oil-exporting country like Mexico, large oil revenues coincided with a significant contraction of agriculture and agricultural export sectors. Sectors other than the oil sector suffered from an inability to compete in foreign markets due to a higher exchange rate, which was as a result of increased demand for its oil exports. It has been observed, however, that the "resource curse" model may not be an appropriate tool for describing the growth patterns of OPEC or Arab economies, since it is based on assumptions of full employment of resources, external balance, wage/price flexibility and immobility of production factors across borders, assumptions that do not necessarily hold true for OPEC or Arab economies, where state ownership of oil resources gives the state an important role in sectorial supply and prices. The first challenge is the possible appreciation of the Real Exchange Rate (RER). This is due to the increase in the price of non-tradable goods and services (windfall revenue). The second challenge is the possible drop in productivity, in which the potential productivity achievements become limited as attention shifts towards the non-tradable sectors (Martin and Subramanian, 2003).

Matsuyama (1992) declared that the role of agricultural productivity in economic development could be addressed in a two-sector model of endogenous growth. Firstly, preferences considered as non-homothetic and the income flexibility of

command for the agricultural good is less than unitary. Secondly, the engine of growth considered learning-by-doing in the manufacturing sector. Regarding closed economies, such a model predicts a positive link between agricultural productivity and economic growth. It formalizes conventional wisdom, which emphasizes the need of agricultural revolution for industrial revolution. On the other hand, with respect to open economies, such model predicts a negative link. This is namely, that a more rapid development will be experienced by an economy with a quite unproductive agricultural sector.

One of the essential factors that should result is an open economy with a growth strategy plan and predicted growth performance. In many respects, agriculture has suffered from the consequences of the Dutch Disease: we can see this happening in Ghana during the period of oil exploration. Firstly, the real exchange rate appreciation affects Ghanaian agriculture; the increased concentration of labour in cities can lead to increased pressure on agricultural wages and a decrease in the external competitiveness of the import-competing and export-oriented agricultural sectors. Secondly, the non-tradable sector is also affected; there is an impact on agricultural products. Thirdly, the price of imported food falls, compared to domestically produced food, so Ghanaian agriculture could suffer (Matsuyama (1992)). However, it is possible for the imported inputs to be less costly with RER appreciation, so that it is possible for agricultural production to increase by means of oil revenue investment. In countries such as Ecuador, Mexico, Algeria and Iran, the agricultural sector suffered a lot during the nineteen-seventies due to the oil boom (Martin and Subramanian, 2003).

2.3 Chapter summary

It can be concluded from the above that there is no established or specific standard for determining the role of agriculture in development because of the different nature and different degree of growth in each country, as well as the different agricultural policies applied in each country. Moreover, many studies discussing the importance of agricultural policies and their role in improving the performance of farmers pay more attention to those policies, which impact directly on farmers, such as financing, support, subsidies and pricing.

It has been found that such policies differ qualitatively and quantitatively from country to country according to the varying importance of the agricultural sector in the country and its relation to other sectors of the economy.

CHAPTER THREE: AGRICULTURAL POLICY IN LIBYA

3.0 Introduction

This Chapter reviews literature relevant to Research Aims 4) to assess critically the agricultural policies of Libya for the period 1973 to 2007, and 5), to identify the key issues that cause weaknesses in agricultural policies and investigate the effectiveness current policy.

Literature on both the historical development of agriculture in Libya and Libyan agricultural policy is scarce. This study is one of the several attempts that may be needed to fill the gap. This chapter contributes to the literature through the collection and analysis of data from government and other sources and provides summary background to the historical development of agricultural policies. It also examines initiatives undertaken by the Libyan government on agricultural development, policies and plans. The performance of these policies is assessed in Chapters Four and Five. The current chapter first presents a general background to Libya, with specific attention to the economic sector, to provide an outline of macro and agricultural policies in Libya. The researcher then examines the agricultural policies in operation during core two periods: between 1973 and 1985; and after 1985. The chapter addresses Research Aim 3), which is to study the changes and development that has taken place in both macro policies and agricultural policies in Libya as well as Research Objective 1, which is to identify key policy initiatives in Libyan agricultural development through secondary data.

3.1 Geographical location of Libya

According to AOAD (2006) and FAO (2005), Libya is located in North Africa, it is the fourth largest country in Africa by area, and is situated in the centre of the North African coast of the Mediterranean Sea and border on the East by Egypt, the south by Sudan, Chad and Niger, and the west by Algeria and Tunisia. Libya is located between longitudes 9° and 25° East and latitudes 25° 18' and 33° north. The geographical location of Libya is important when considered as bridge linking Africa and Europe and between the eastern and western parts of the Arab world. Libya has a total area about 1,775,500 kilometres square and bordering the Mediterranean Sea to the North by about 1,770 kilometres. The total population reached about 5.77 million in 2007. The majority of the

population live in a belt along the Mediterranean coastline. Figure 3.1 below is a map of Libya (El Shikhi, 2009). The greater part of Libya is located within the scope of desert and warm climate prevails in most areas, except the narrow strip that extends along the Mediterranean and some mountainous areas located in the North of the country, where rainfall are sufficient for agricultural activity (El Messallati, 2007). For example, the climate of Al Jabal Al Akhder region is suitable for the growth of forests and jungles of evergreen and the Sahel Al Jafarah is suitable for seasonal grasses. Temperature is high due to the location of Libya in the Orbital and sub-orbital with the exception of the coastal strip and the Al Jabal Al Akhder and El Jabel Al Garbi, while the temperature is moderate or goes down considerably in the winter.

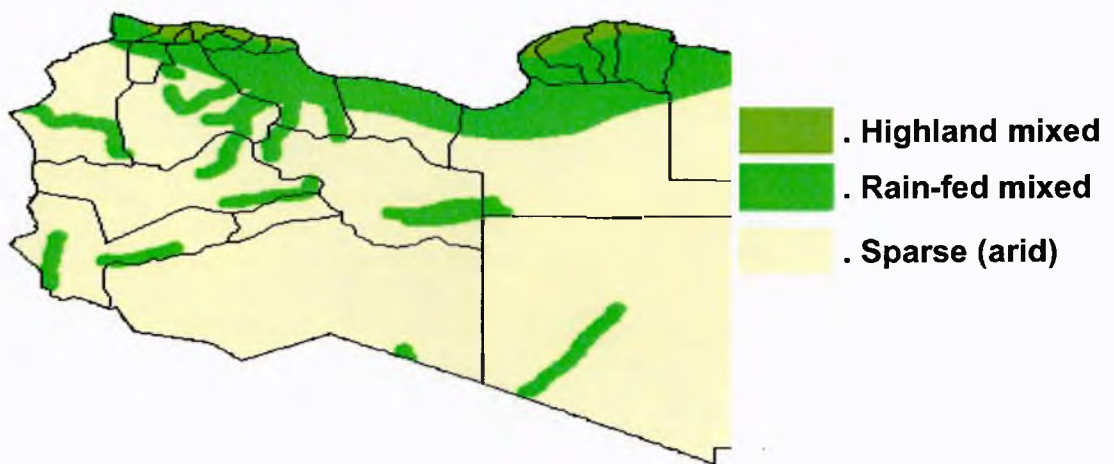


Figure 3.1 Map of Libya

Source, Ziydan (2007)

Throughout the year, humidity is high by the coast due to wet winds from the sea and very low in the desert areas due to aridity. In summer, there are easterly winds, followed by south-easterly and north-westerly winds. In winter, northerly and north-westerly winds blow across the northern regions, while in the southern regions, the northern and North East winds prevail throughout the year. Generally, Libya is characterized by a tropical desert climate dominated by drought (FAO, 2005).

3.2 Libyan economy

Libya has gone through many political and economic changes since the 1900s, when Libya experienced Italian occupation. Until oil was discovered in the late Nineteen-fifties, the Libyan economy depended mainly on the agricultural sector, which contributed more than 30% to the GDP and employed about 70% of the total labour force (El Azzabi, 1974). In addition, the agricultural sector provided raw materials for the manufacturing sector. Libya was classified at that time as one of the poorest countries in the world.

In 1969, Libya underwent a political transformation, and this resulted in the government nationalising oil companies, agricultural lands and farms, most of which were owned by Italian settlers. The Libyan regime then adopted a socialist system of governance, with government intervention in economic activities becoming the dominant feature in the Libyan economy (Abdussalam, 1985). High oil revenues provided an appropriate environment for the financing of all development projects, including agriculture, especially during the nineteen-seventies when 80% of state revenues came from oil. In the early nineteen-eighties, oil prices began to decline and this had a significant effect on the Libyan economy. The sharpest fall in oil prices occurred in 1985, a year that saw Libyan government spending fall accompanied by an attendant lowering of quantities of goods imported, and the consequent problems in the payment of debts (Alfitouri, 2004).

At the end of the nineteen-eighties, the government moved to transfer the ownership of large governmental projects to private investors, similar to what happened in the developed countries of Europe, such as Britain, Germany and France, as well as in Japan (Ghanem, 1985). However, there were still signs of government intervention in economic activities. There were also attempts by the government to strengthen the role of trade through trade liberalization in 1992, and the gaining of membership of the world trade organization. Unfortunately, because of the practices of the political regime, Libya was exposed to economic sanctions: the Lockerbie PAN-AM plane bombing in 1992 provided the perfect grounds for economic isolation from most of trading partners. Sanctions were lifted in 2003 to allow the re-entry of foreign investment, particularly in the energy sector (Otman and Karlberg 2007).

Libya has massive oil revenues; and according to reports from the International Monetary Fund, oil production totally dominates all economic activity. Its contribution increased from 50% of GDP in 2002 to about 71% in 2007. Oil revenues contributed about 95% of export earnings and more than 75% of government receipts (IMF, 2008). See table below.

Table 3.1 Contributions of the Libyan economy sectors to GDP (current prices) percent

Sectors	1973	2003	2005	2007
Oil sector	49.70	57.60	69.50	71.6
Agriculture, fishing, and forestry	2.70	3.60	2.20	2.00
Manufacturing	2.40	1.90	1.30	1.20
Electricity, gas, and water	0.50	2.00	1.30	1.10
Construction	4.20	4.80	4.00	4.30
Trade, hotels, and restaurants	6.90	4.90	3.90	3.40
Transportation, communication, and storage	4.80	4.70	3.50	3.30
Financing, insurance, and business services	2.40	1.50	1.00	1.00
Housing	-	10.00	6.30	5.20
Public services	7.20	9.00	6.80	6.80
Other services	-	0.10	0.10	0.10

Sources: IMF (2008), Central Bank of Libya, (2008)

Despite the low performance of the housing, trade and transportation sectors, their contributions were better than the remaining sectors, including agriculture, whose contribution decreased over the period to about 2% in 2007 (Alafi and Bruijn, 2009).

The World Bank (2011) classified Libya as an upper-middle income developing country. The industries of oil and gas dominate the Libyan economy. They have contributed to the transformation of Libya from one of the poorest countries in the world, in the nineteen-sixties, to one of the richest, with the highest *per capita* income in Africa and the Mediterranean region (Vandewalle, 1996). Figure 3.2 shows that the *per capita* income of Libya is the highest of all African and Mediterranean developing countries (with high *per capita* in the region).

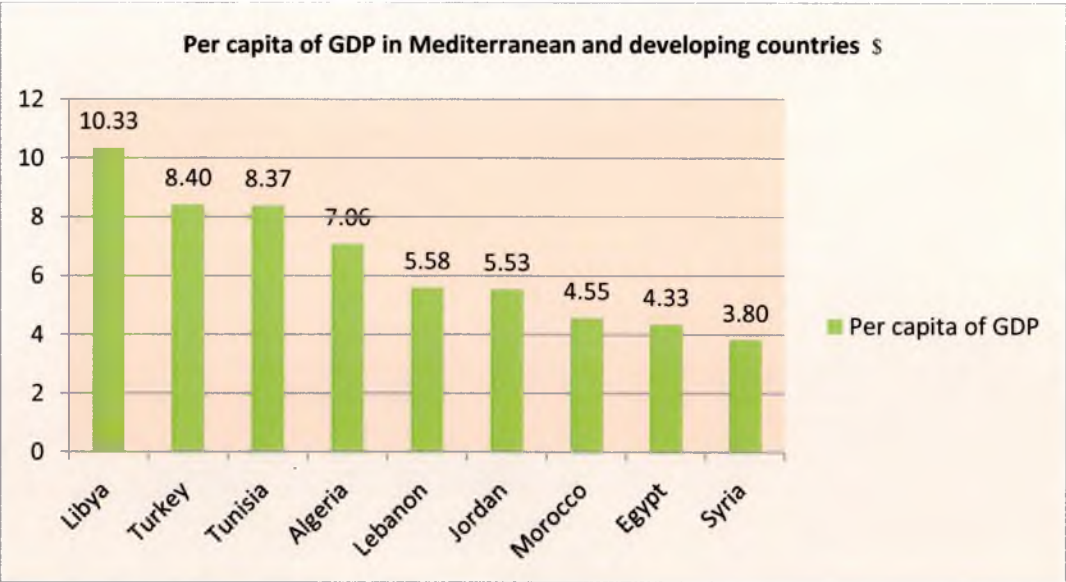


Figure 3.2 *Per capita of GDP in Mediterranean and developing countries*
 Source: UNDP (2007)

Available data on the distribution of the labour force by economic activities in Libya, as shown in Figure 3.3 below, indicates that the education sector had the highest rate of employment with the percentage of about 27.3% on average for the period from 2001-2007, with that of public administration being 16.4%. There was a decrease in the agricultural labour force, averaging about 5.4% for the period, down from 18.5% in the early nineteen-nineties (IMF, 2008).

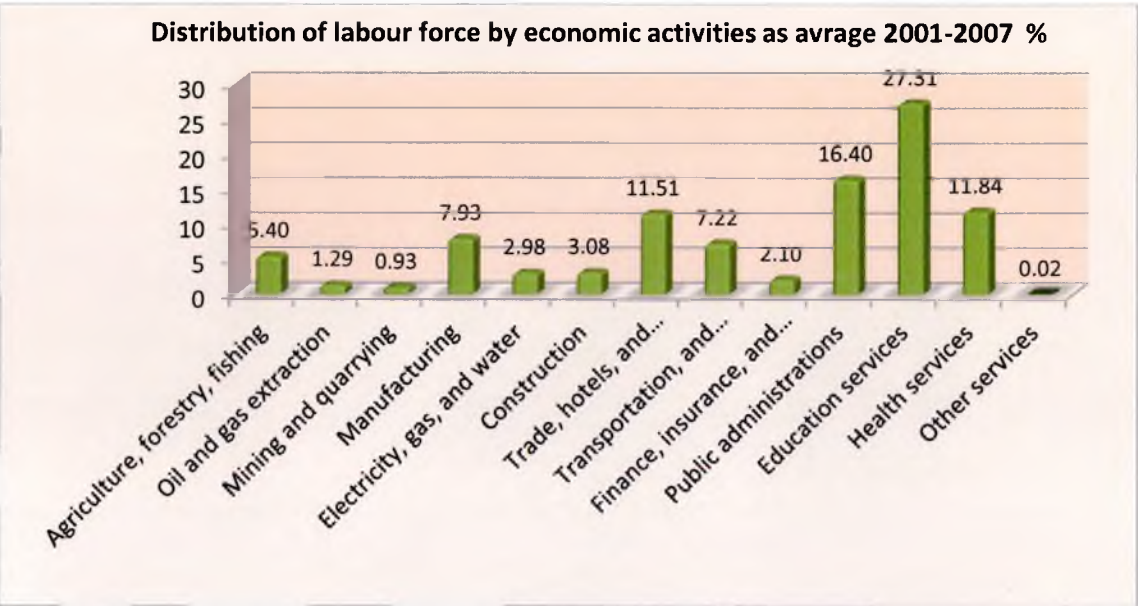


Figure 3.3 *Distribution of labour force by economic activities as average 2001-2007*
 Source: IMF (2008)

Libya is characterized by a large geographical area with low population density and high oil and gas resources. Libya therefore depends heavily on one export commodity, which is the main source of foreign currency (Hweta and El Megri, 1999). With limited resources other than oil and gas, Libya depends on imports of intermediate goods and food to meet its growing domestic demand. The increases in local market requirements led to an increase of total imports of various goods and services. This could be partly attributed to the nature of development plans, and to the shortage of capital goods in the local market (El Messallati, 2007), Figure 3.4 compares exports and imports from 1970-2005.

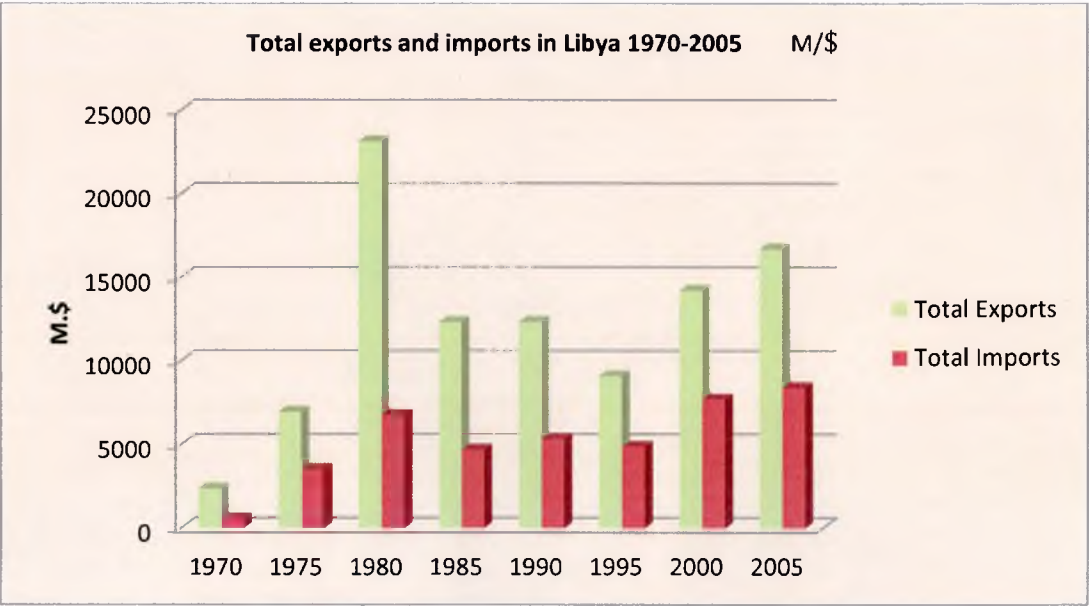


Figure 3.4 Total exports and imports in Libya 1970-2005

Source: Calculated from Ministry of Planning, General Administration of Socio-economic Indicators for the Years 1962-1996; December 1997 Annual Reports, Central Bank of Libya (1997-2005).

Table 3.2 shows the performance of the Libyan export and import sectors, with oil representing about 97% of total exports. This exemplifies how the economy is characterized by a single commodity export. Agricultural imports on the other hand, represented about 10% of total imports; that also reflects the dependency on global market for the provision of agricultural commodities. It is worth mentioning that the agricultural imports continued to increase as shown in Table 3.2.

Table 3.2 Commodity structure of total exports and imports in Libya during the period 2004/2007 (US. \$)

Statement	2004	2005	2006	2007
Exports	20410.00	31358.00	39187.00	44523.00
Hydrocarbon sector exports	19533.00	30458.00	38207	43395.00
Other exports	877.00	900.00	980.00	1128.00
Imports	8768.00	11183.00	13062.00	17401.00
Food and beverages	935.00	955.00	1145.00	1423.00
Industrial supplies	1758.15	1845.12	2127.21	2754.19
Fuels and lubricants	552.18	786.06	829.27	1207.85
Capital goods (except transport equipment), and parts and accessories thereof	2203.49	2058.95	2397.38	2731.28
Other imports	3319.18	5537.87	7460.86	9284.86

Source: OECD (2008)

3.3 The historical development of agricultural policies in Libya

Until the early nineteen-fifties, Libya was one of the poorest countries in the world, with the low average *per capita* income of US\$30 (GPCT, 1993). A set of plans and agricultural programmes was drawn up during the period 1952-1968. The purpose of these plans was to develop existing agricultural land and improve conditions for farmers. The plans focussed on the search for groundwater, forestation, sand dune stabilization, protection from floods and the provision of some simple agricultural services. According to El Messallati (2007), these plans were never completed due to financial bottlenecks and a lack of funding. Additional factors that hindered the implementation of the plans related to the standard of living of Libyan society, which was marked by poverty, unemployment, and high levels of illiteracy. The spread of disease also contributed to the failure of those plans. Atiga (1972) maintains that, in addition, a shortage of agricultural technical labour, a lack of technical information and economic studies acted as the main obstacles impeding the realisation of the plans.

Although, the agricultural sector in Libya has the necessary financial support it is confronted with many limitations, which make the effective utilization of funds

difficult. The agricultural sector has received a lot of attention, especially within the framework of strategic economic and social transformation that has been supported with budgets since 1970. These include: the three-year plan (1973-1975), the first five-year plan (1976-1980), and the second five-year plan (1981-1985), and a strategic approach contained within a series of annual policies from 1986 to 2007 (GPCT, 1993). These were drawn up with the knowledge that the development of the agricultural sector could lead to economic diversification and reduce the role of oil in the national economy. In recent decades, Libya has adjusted its policies, to overcome its agricultural problems. It has optimised the use of agricultural resources, and accelerated the rate of agricultural development (Al Arbah, 1996). In the next section, attention will focus on the agricultural policies of the two main study periods, which saw the adoption of two different approaches to agricultural policy; the impact of these two approaches on the performance of the agricultural sector will be to assessed in the subsequent chapters

3.3.1 The first agricultural policies approach in the form of medium-term plans (1973-1985)

During this period Libya adopted a set of agricultural plans and programmes that took the form of a three-year plan (1973-1975) and two five-year plans (1976-1980 and 1981-1985). Agriculture had received a lot of attention within the framework of strategy and objectives of economic and social transformation as it was seen as the most effective sector for diversifying the national economy. The plans aimed at reducing the dominance of mining activity and the export of oil (GPCT, 1996). The plans sought to achieve following objectives:

- To increase agricultural production to a high proportion of self-sufficiency
- To achieve the optimal economic exploitation of natural resources such as water resources
- To give attention to the human element and the organizational structure of the sector through a range of programmes including training, formation of agricultural research, extension and marketing services.
- To link agricultural production with industry and to achieve balanced development, and to work on the manufacture of agricultural products to replace imports.

- To provide jobs and stability in the agricultural areas through projects, and the development of agriculture in villages and to increase farmers income (GPCT, 1996).

The implementation of development plans in the field of agriculture after the nineteen-sixties encountered the following difficulties:

1. Shortage of water resources, particularly in the northern parts of Libya and its dependence on underground water storage and insufficient monsoon rains.
2. Lack of administrative and technical staff for implementation and commensurate technical and scientific developments witnessed by the world in the field of agriculture.
3. Agricultural research did not keep pace with development requirements and the difficulty in finding scientific solutions to the bottlenecks facing them, especially in the areas of advanced technologies that increase the productive efficiency of crops and livestock.
4. Weak agricultural extension programmes and inadequate existing ones that failed to create a farmer who was able to benefit from investments and maintenance of farms.
5. Weak institutions in the areas of agricultural financing, markets and processing.

In spite of the above challenges, investments in agriculture achieved a number of successes in the areas of increased production, land reclamation, building of houses for farmers and roads, agricultural projects, the establishment of crops and animal production complexes, and integrated provision of essential infrastructure for the sector (AOAD, 1994). The agricultural policies in the 1970s were aimed at achieving the following targets:

First: To maximise production of food to achieve the real independence of the Libyan Arab community through the achievement of the highest rate of self-reliance and security of food/agricultural commodities.

Second: To link agricultural production with industry in order to achieve a balanced development between them, and work on the manufacture of agricultural products to replace imports (GPCT, 1996).

The need for achieving these objectives led to a set of policies and objectives, which were represented in the framework. The main features of the agricultural policies in Libya can therefore be summarized as follows:

- Find solutions to the problems encountered in the implementation of economic and social transformation plans in agriculture and the implementation of research priorities to increase agricultural production and transfer of technology, which serve the agricultural sector. In addition, link the horizontal expansion with the available natural resources to achieve continuous production according to scientific studies and the optimal use of land (AOAD, 1994).
- Train the human resources for the purpose of using technology efficiently and achieve the objectives of vertical expansion in agricultural production.
- Encourage the private sector to increase its contribution to agricultural gross domestic product at different levels (individual, family, cooperative associations).
- Support agricultural subsidies so as to increase production, improve services and maintenance programmes for resources aimed at guiding agriculture to ensure the production of strategic crops for the achievement of high production rates and the optimal use of natural and human resources.
- Give attention to agricultural marketing and encourage the private sector to provide the requirements of efficient agricultural marketing to reduce waste in agriculture.

- Rationalize water use, especially in coastal areas and accelerate the implementation of projects to transfer water from the southern regions to the coastal areas.
- Give attention to practical aspects of agricultural education to ensure the scientific training and practice of agriculture graduates (GPCT, 1996).

In the nineteen-seventies, the world suffered from food crises and this preoccupied agricultural policy planners. The effects of this crisis were huge in the Arab world. This led to the adoption of an agricultural development policy in Libya for the achievement of food security and other goals through the successive transition plans (1973-1985), the objectives of which can be summarized as follows (AOAD, 1994).

- Achieve food security through self-sufficiency in agricultural production, especially in cereals, vegetables, fruits and meat.
- Apply appropriate pricing policies to achieve a balance between supply and demand.
- Preserve the environment and protect natural resources of soil and water, and their agricultural use in an exemplary manner.
- Group small agricultural units into big farm units to take advantage of economic production.
- Coordinate between agriculture and the manufacturing sector.
- Achieve the spatial balance through the resettlement of farmers in new agricultural areas, and to realize specific quantity goals.

The goals and implementation of each plan are examined below.

A: Three-year plan (1973-1975)

This plan, which was part of a comprehensive national plan, was adopted by a constitutional declaration. The orientation of the national economy was one that was based on cooperation between the public and private sectors, diversifying sources of national income and realizing a maximum rate of economic growth. This strategy focused on agriculture and industry (GPCT, 1996)

The objective of agricultural policy in this plan was to increase agricultural production to achieve higher rates of self-sufficiency in agricultural production. This was through horizontal expansion programmes and by the reclamation and cultivation of new areas and vertical expansion through improving and increasing productivity.

The actual expenditure for the achievement of the targeted plan was about \$1,869 million out of the total allocation of \$2,019 million, and represented 92.57 percent of the total allocation (AOAD, 1994). The agricultural policy had targeted reclamation of about 313 thousand hectares. In the case of irrigation, the target was to reclaim and cultivate 109 thousand hectares but only 35.5 hectares was achieved, about 32.6%, and this was due to inadequate groundwater resources. Rain-fed agriculture's target was 204 thousand hectares in areas where the rainfall rate was about 200 mm/year; however, 107.8 thousand hectares, about 52.8% of the target, was achieved. Lack of appropriate mechanisms for the implementation of the plan accounted for the low achievements. Other drawbacks were lack of important factors such as water resources; time allocated for the plan; and limited local technical personnel (El Messallati, 2007).

Targets for crop production were:

- Increase domestic production of wheat from about 41.6 thousand tonnes in 1972 to about 161.6 thousand tonnes in 1975.
- Increase the local production of barley from about 116.4 thousand tonnes in 1972 to about 181,400 tonnes in 1975.
- Increase agricultural production of vegetables from 383 thousand tonnes in 1972 to 499 thousand tonnes at the end of 1975 while, domestic production of fruits were to increase from about 111.6 thousand tonnes to about 141.6 thousand tonnes at the end of 1975 (AOAD,1990).

In the case of animal products, the targets were:

- Increase the total production of meat from about 33.4 thousand tonnes in 1972 to 43.7 thousand tonnes at the end of 1975.

- Increase milk production from about 56.7 million litres in 1972 to about 95.4 million litres at the end of 1975, and eggs from about 41.8 million eggs in 1972 to about 71.8 million eggs in 1975 (GPCT, 1996).

The rate of agricultural productivity for different crops varied, as shown in Table 3.3 but most crops achieved satisfactory targets.

Eggs and some crops such as vegetables achieved high targets because of the investments and the presence of marketing and pricing incentives. Wheat, despite its significance did not achieve more than 46.5% of the targeted production and this was due to strong competition from barley and vegetable crops, which had a price advantage. It was also due to the inability of the state to impose certain cropping pattern. Furthermore, the prices of wheat at the mills did not favour farmers (GPCT, 1996).

Subsidies, pricing and marketing policy in the first agricultural policy

The aim of this policy was to achieve comprehensive development in agriculture. In addition, it aimed at using increased agricultural production to raise the income levels of workers in this sector and to create a balance between the supply and demand of agricultural products (GPCT, 1996).

Table 3.3 Planned and achieved production of agricultural policy goals (1972-1975)

Crop	Unit	Production in 1972	Targeted production 1975	Achieved production 1975	% achieved to targeted
Wheat	1000 tonne	41.60	161.60	75.10	46.50
Barley	1000 tonne	116.40	181.40	191.80	105.70
Vegetables	1000 tonne	383.00	499.00	562.30	112.70
Fruits	1000 tonne	111.60	141.60	130.40	92.00
Meat	1000 tonne	33.40	43.70	37.70	86.30
Dairy	M litres	56.70	95.40	86.60	90.70
Eggs	M eggs	41.80	71.80	160.00	222.80

Source: AOAD (1990)

To achieve these aims, a set of plans and programmes in the agricultural policies of the nineteen-seventies and nineteen-eighties supported prices for agricultural inputs and livestock. These were achieved within the financial

support programmes sponsored by the Ministry of Agriculture and the Agricultural Bank. The support included subsidies on chemical fertilizers, feed, and equipment. For example, bee-keeping equipment was supported by 80%, pesticides by 60% and agricultural machinery by 50% for cooperative associations and 25% for individuals (El Messallati, 2007).

The support also covered extending power lines, water projects and railways, which were subsidized by 50%. The total amount of subsidies during 1970-1980 was estimated at about 165 M.LYD (El Messallati, 2007). These subsidies sought to encourage farmers to adopt modern agricultural practices. Furthermore, the prices of agricultural products were also subsidized; especially wheat, barley and olive oil (El Shiakhi, 2009).

The purchasing price of wheat was about 150 Dinars per tonne, and barley about 130 Dinars per tonne. These prices were encouraging at that time as they were higher than domestic and international prices. The mechanisms of supply and demand determined the prices of non-subsidized agricultural commodities, such as vegetables and fruits. The low prices of vegetables in the harvest season resulted from gluts in local markets, that is, supply far in excess of demand (GPCT, 1996).

The purpose of these policies was to support agricultural production through the reduction of inputs and production costs, and encourage farmers to adopt modern agricultural methods (El Shiakhi, 2009). This meant the achievement of a higher rate of return; higher productivity by farmers; and lower prices to consumers. The pricing policies of agricultural production inputs were complementary to the agricultural credit policy (interest-free) aimed at increasing the self-sufficiency ratio of agricultural commodities and livestock. The reduction in production costs was also aimed at increasing farmers' incomes and engaging them in other agricultural activities such as poultry- and bee-keeping, the purpose of which was to add new sources to their incomes (El Messallati, 2007).

According to GPCT (1996) the international price of wheat fell from about 69.54 Dinars to about 51.8 Dinars, and then to about 43 Dinars per tonne during

1976-1977 and 1978, respectively. At the same time, the volume of support per tonne of wheat increased from about 80.96 Dinars to 98.12 to about 107 Dinars for the years 1976-1977 and 1978 respectively. Also the subsidy for barley increased from about 57.38 Dinars to about 65.85 Dinars per tonne in the same period. The incentive price for wheat and barley in the local market was increased significantly, which encouraged farmers to sell their produce to warehouses of the state rather than to the public wholesale markets (El Shiakhi, 2009).

Table 3.4 below shows a comparison of the three price levels (domestic price, world price and state incentive prices) for the period 1976 to 1978. The world prices of the crops declined during the period 1976 to 1978 however, the domestic prices increased at the same time and led to increase in the gap between domestic prices and world prices. In 1976, the domestic prices of wheat and barley were less than world prices. In 1977, the price of local wheat rose sharply, whereas the world price of barley decreased until 1978 (GPCT, 1996).

As a result of the pricing policies, which had been implemented in the nineteen-seventies and nineteen-eighties, the areas under cultivation and production saw a remarkable increase.

Table 3.4 Import & promotional and size of the support from 1976-1978 (LY.D/ tonne)

Crop	1976		1977		1978	
	Wheat	Barley	Wheat	Barley	Wheat	Barley
Import price	69.54	72.62	51.88	64.15	43.00	63.25
Promotional price	150.00	130.00	150.00	130.00	150.00	130.00
The amount of support	80.96	57.38	98.12	65.85	107.00	66.75

Source GPCT (1996)

Table 3.5 and Figure 3.5 below show the level of increase over the five-year period. The grain crops had the greatest increase during the first four periods but the production of grains decreased to about 34.8% of the total cultivated area in the period of 1991-2000. Fruits, the second largest group of crops in terms of cultivated area represented about 18% of the total cultivated area during the first four periods. From 1991-2000, the cultivated area devoted to

fruits increased to about 58.8% of the total cultivated area and became the foremost group of crops in terms of the cultivated area. While the cultivated area of vegetables was estimated about 8% of the total cultivated area in the period of 1970-1990, it decreased to 6.5% during the 1991-2000. This decrease might be due to the absence of pricing policies during the period. Realistic data on prices of agricultural commodities were not available during the nineteen-seventies, despite the existence of two institutions dealing with price recording and dissemination (Abdulgader, 2005).

Table 3.5 Evolution of the cultivated area of some agricultural crops during the period of 1970-2000

Crops	1970/1975		1976/1980		1981/1985		1986/1990		1991/2000	
	Area/ 1000 ha	% of the total cultivated area	Area/ 1000 ha	% of the total cultivated area	Area/ 1000 ha	% of the total cultivated area	Area/ 1000 ha	% of the total cultivated area	Area/ 1000 ha	% of the total cultivated area
Grain	373.8	73.20	588.90	74.60	628.80	72.30	502.70	62.60	205.30	34.80
Fruits	95.48	18.60	140.26	17.80	160.76	18.50	201.05	25.10	346.66	58.80
Vegetables	41.67	8.20	59.74	7.60	80.12	9.20	99.00	12.30	37.84	6.40
Total	510.95	100.00	788.90	100.00	869.68	100.00	802.75	100.00	589.80	100.00

Source: Abdulgader (2005)

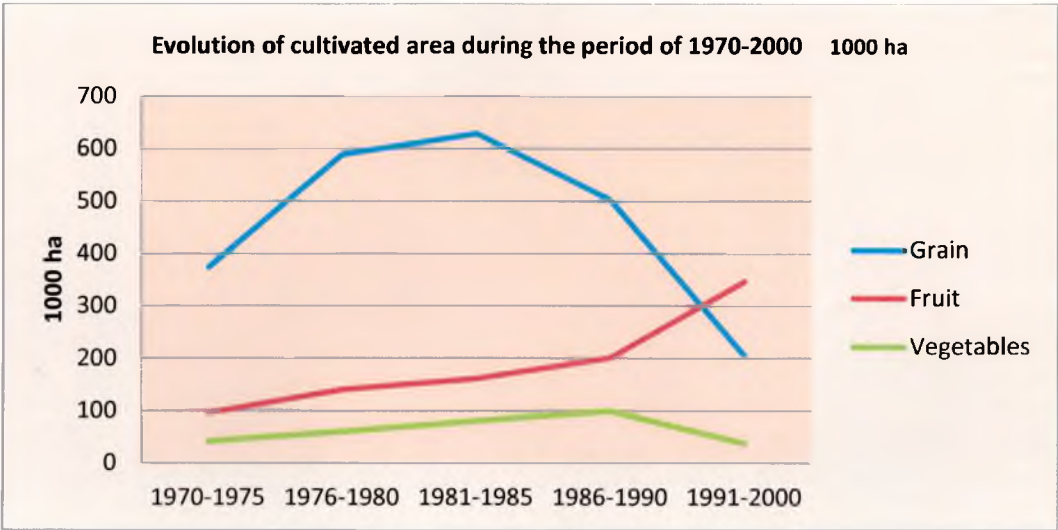


Figure 3.5 Cultivated area from 1970-2000

Source: Abdulgader (2005)

B: First five-year plan 1976-1980

According to El Shiakhi (2009), the first five-year plan (1976-1980) is considered an extension of the three-year plan (1973-1975). The plan included the implementation of basic strategies in the agricultural sector based on self-sufficiency in most agricultural crops and natural resources protection and exploitation. It aimed at raising the incomes of farmers by increasing the productivity of agricultural land, setting up agricultural units in areas characterized by abundant production, as well as achieving the following general objectives:

1. Self-sufficiency in grains, fruits, vegetables and meat in the shortest possible period.
2. Protection of natural resources of soil and groundwater.
3. Eliminate rural poverty by combining small and fragmented units into integrated agricultural units to ensure economy of scale in agricultural production and also to facilitate the use modern agricultural methods.
4. Increase the productivity of land by encouraging farmers to use modern techniques and thereby raise their incomes to parallel other sectors.
5. Establish agro-industrial units in areas characterized by abundant agricultural production to create stable communities in agricultural areas and to reduce disparities between regions as much as possible so as to provide decent life for citizens who are working in agriculture.
6. Increase agricultural production and continue applying policies on subsidies, loans and exemption from customs duties and taxes and the provision of marketing services.
7. Strengthen the possibilities and means of scientific research in the agricultural field (AOAD, 1990) and (El Shiakhi, 2009)

The national transition plan of (1976-1980) adopted many agricultural policies to ensure balance between available resources and the objectives of the development plan. Below are some of the policies adopted.

- **Credit policy:** such policies were intended to provide loans to farmers through the agricultural bank. These loans are divided into three types, namely:

- Long-term loans to dig wells, build water tanks, barns and warehouses,
 - Medium-term loans for the purchase of agricultural machinery and equipment and improved livestock breeds, and
 - Short-term loans (seasonal loans) to cover the expenses of the annual wages of workers and buy seeds and fertilizers.
- **Subsidies policy:** such policies intended to raise the level of agricultural production especially in the early stages of development by reducing the costs of production and encouraging farmers to continue the production of food commodities. It was to accelerate access to self-sufficiency by subsidizing chemical fertilizers, animal feed, pesticides and agricultural machinery.
 - **Pricing policy:** the aim of this plan was to maintain a balance between the prices of agricultural products and the prices of other goods as well as to achieve remunerative prices for farmers in order to increase their incomes and encourage them to increase production.
 - **Marketing policy:** this plan was to maintain consumer prices; the government therefore built a network of warehouses and silos.
 - **Agricultural cooperation policy:** the policy was intended to promote cooperation between various agricultural sectors.
 - **Agricultural mechanization policy:** was intended to raise the degree of agricultural mechanization to mitigate the problem of lack of labour in the agricultural sector of Libya.
 - **Productivity of agricultural lands policy:** increase the productivity of agricultural lands through the expansion of the vertical and horizontal scopes. In the vertical expansion scope, the plan envisaged the application of methods of scientific progress and modern technology, improved strains, the use of improved seeds and pest control, the promotion of the development of livestock and also the training of farmers. With the horizontal expansion the largest possible area of agricultural land was added for the achievement of attractive economic return (El Messallati, 2007).

The agricultural policy targeted a set of production objectives during the five-year plan (1976-1980), which are summarized below:

1. Increase local wheat production from about 75.1 thousand tonnes in 1975 to 304 thousand tonnes at the end of 1980.
2. Increase the production of barley from about 191.8 thousand tonnes in 1975 to 245 thousand tonnes at the end of 1980.
3. Increase the production of vegetables from about 562.3 thousand tonnes in 1975 to 767.3 thousand tonnes in 1980.
4. Increase the production of meat from about 37.7 thousand tonnes in 1975 to 89.7 thousand tonnes in 1980.
5. Increase milk production of about 86.6 million litres in 1975 to 289.6 million litres, and 160 million eggs to about 340 million eggs at the end of 1980 (AOAD, 1990).

The plan achieved a reasonable degree of its ambitious production targets with the exception of cereals, dairy products and legumes, the shortfalls of which were due to inadequate resources, especially water. There was also a shortage of technical staff necessary for implementation and follow-up. Libya relied on foreign companies for most of the work, which negatively affected a number of components of the plan. This will be discussed later (El Shiakhi, 2009).

Table 3.6 below shows production targets and achieved production (1976-1980). The implementation of the objectives of agricultural policies in this plan faced a number of problems, mostly:

1. Slow pace in executing and implementing projects on schedule by contracted companies
2. The lack of technical workforce and trained national experts
3. The absence of marketing policies that were based on a sound footing

Table 3.6 Production and targets achieved (1975-1980)

Crop	Unit	Production in 1975	Targeted production 1980	Achieved production 1980	% achieved to targeted
Wheat	1000 tonne	75.10	304.10	140.50	46.20
Barley	1000tonne	191.80	245.00	71.00	29.00
Vegetables	1000 tonne	562.30	767.30	658.00	85.50
Fruits	1000 tonne	130.40	253.40	162.00	63.40
Meat	1000 tonne	37.70	89.70	158.00	176.10
Dairy	Million litres	86.60	289.60	110.00	38.00
Eggs	Million eggs	160.00	340.00	285.40	84.00

Source: AOAD (1990)

4. Fluctuating weather pattern, which resulted in irregular rainfall, desertification, and desert encroachment (AOAD, 1994)?

C: Agricultural policy Second five year plan (1981-1985)

The objectives of the agricultural development policy in Libya during the five-year plan of 1981-1985 according to El Messallati (2007) were aimed at:

- Increasing agricultural production in order to achieve higher rates of self-sufficiency in agricultural products through the horizontal expansion of land reclamation, and vertical expansion to improve and to increase the productivity of the area under cultivation.
- Achieving economic exploitation of natural resources,
- Linking the agricultural production sector with the industrial sector, and
- Providing jobs and stability in the agricultural areas.

Because of the great attention given by Libya to the agricultural sector during the nineteen-eighties, self-sufficiency of wheat improved and high production levels were achieved for barley, meat (especially poultry), vegetables and fruits. The rates of self-sufficiency in legumes and oilseeds however remained low (El Shiakhi, 2009).

Despite the attention, agricultural development in Libya did face a number of natural, technical, financial and administrative hurdles, limited arable land and its inadequacy for some crops being the most significant natural obstacle. In addition, the weather and climatic conditions were not favourable. Technical obstacles were related to the ideal methods for land use, and the advanced technologies imported from abroad were not suited to the conditions and nature of the environment in Libya. The lack of trained and skilled agricultural workers also led to a dependence on foreign labour. As a result of the foregoing, the projects were characterized by instability, negative economic impacts as well as poor transfer and dissemination of information to farmers. In addition, there were the financial and administrative constraints such as inadequate allocations in the budgets and poor transition plans.

With respect to marketing and distribution policies, the state monopolised agricultural marketing, or rather, approved individuals and farmers for the marketing and distribution of agricultural commodities (El Messallati, 2007). This created some competition among players in the industry, both public and private, raised efficiency and reduced waste in the marketing of agricultural products. With regard to pricing policies, the state supported prices of certain agricultural commodities, especially wheat and barley and thus fixed prices for some raw materials. This ensured marginal profit and various cash loans for the producers and provided raw materials for industries (GPCT, 1996).

According to (El Shiakhi, 2009) Libya gave considerable attention to agricultural extension within this period and this helped to raise the efficiency of farmers. Libya adopted policies to import large amounts of food. It also regulated the foreign trade of agricultural commodities by setting up institutions and public companies, which specialized in meeting the needs of the market through the national import budget. Due to fluctuating rainfall, crop production was not stable and fluctuating amounts of food commodities had to be imported to fill the gap between production and consumer's needs (AOAD, 1990). The imports of cereals, especially wheat, increased during 1981-1985, while agricultural exports were generally low, less than 50 million dollars annually, a situation that is attributed to Libya's weak policy towards self-sufficiency as well as inadequate basic agricultural resources, especially water (AOAD, 1990).

3.3.2 Implementation of the plan objectives during the second five-year plan (1981-1986)

The objectives of this plan were considered an extension of the previous plan with focus on the following (El Messallati, 2007):

1. Organizational aspects and human resource development so as to increase the effectiveness of investments, and
2. Support for training programmes, extension, research, cooperation and agricultural marketing, making use of existing institutions.

Aquaculture reforms programme in the plan aimed at reclaiming an area of about 622 thousand hectares. There was however no linkage between the objectives of the plan and the period for implementation (AOAD, 1994).

The aim of the agricultural policy of the transition plan of 1981-1985 was to achieve optimum use of natural resources and to maximize self-sufficiency through significant investments in the sector, and land reclamation and development with the increase in the effectiveness of these investments to develop the agricultural production (El Shiakhi, 2009). The targets for this plan were as follows:

- 1) Reclamation and development of 69.89 thousands hectares of irrigated land, 552.5 thousands hectares of rain fed-land, and the increase of the absorptive capacity of pasture land of 1.2 million hectares to ensure the development of sources of forage pastures and the organization of grazing to increase meat production;
- 2) Implementation of the project for the development of the coastal strip in order to achieve optimum utilization of agricultural land in the region while ensuring the reduction of the amount of water utilized in agriculture in the coastline area from 636 million cubic metres annually in 1980 to 198.8 million cubic metres in 1985;
- 3) Increase the agricultural production of goods and food crops to achieve the greatest possible degree of self-sufficiency by:
 - Increasing wheat production from about 140.5 thousand tonnes in 1980 to about 428.8 thousand tonnes in 1985, covering 75.6% of the proportion of domestic demand,
 - Increasing barley production from 71.5 thousand tonnes in 1980 to about 105.6 thousand tonnes in 1985 to cover full domestic demand,
 - Increasing vegetable production from 658.3 thousand tonnes in 1980 to about 779 thousand tonnes in 1985, covering 99.6% of domestic demand,
 - Increasing fruit production of about 162 thousand tonnes in 1980 to about 325 thousand tonnes in 1985 to cover 98% of domestic demand (El Messallati, 2007).
 - Increasing the gross domestic product of meat from about 58.6 thousand tonnes in 1980 to about 120.8 thousand tonnes in 1985

to ensure the contribution of domestic production of meat increased by 75.8% to cover domestic demand.

- Increasing the production of milk from about 110 million litres in 1980 to about 308 million litres in 1985, covering 94% of the total demand (AOAD, 1990)
- Maintaining self-sufficiency of eggs through increasing the production of about 285 million eggs in 1980 to about 823 million eggs in 1985 (Transition Plan for Economic and Social Development in Libya, 1976-1980 in El Shiakhi, 2009).

Table 3.7 shows the planned and achieved production of agricultural policy goals from 1980-1985.

Table 3.7 Planned and achieved production of agricultural policy goals from 1980-1985 (1000 tonne)

Crop	Production in 1980	Targeted production 1985	Achieved production 1985	% achieved to targeted
Wheat	140.50	428.80	271.50	63.50
Barley	71.50	105.10	210.00	200.00
Vegetables	658.30	778.70	827.50	106.30
Fruits	162.00	325.00	289.00	89.00
Meat	58.00	129.80	110.00	85.00
Dairy(million litres)	110.00	308.00	159.50	52.00
Eggs (million egg)	285.40	822.80	554.50	67.40

Source AOAD (1990)

3.3.2 The second agricultural policies approach in the form of annual plans (1986-2007)

Due to the change of policy approach in the second period, after 1986, the pricing policies were completely abolished and that affected the production and the cultivation of crops, which previously had received great attention (El Messallati, 2007).

Libya's agricultural policies after 1985 witnessed remarkable changes and significant developments and were characterized by trends towards the liberalization of domestic and foreign markets. After 1985, there was decrease in planning periods from medium to short-term plans and the adoption of annual

budgets. In addition, long-term plans shifted from rebuilding the productive structure and infrastructure to budgets for operational and maintenance programs. Again, annual budgets were divided into two parts; administrative budgets and variable budgets directed at investments (AOAD, 1990).

After 1985, with the exception of the Great Man-Made river project, it could be argued that the financing of the agricultural sector in general did not go to fixed investments, but was limited to operating expenses. The five-year plans (1986-1990 and 1991-1995) were only draft proposals, as the plans and policies were not adopted (AOAD, 1990; El Messallati, 2007). This period was also characterised by the increasing role of the private sector in economic activities, production and marketing, export and import with a reduced direct role of the state. The decreased direct intervention by the state in managing agricultural resources, and the use of price and market mechanism tools, the disposal of state companies and projects and the transfer of ownership in whole or in part to the private sector affected agricultural production negatively (AOAD, 2000). Libyan political practices, which led to the economic sanctions, may also be a major reason for the noticeable change in the Libyan economy on one hand and the form and approach of agricultural policies on the other hand. Again, the decrease in oil prices and the economic sanctions at the time led to a decline in Libyan oil revenues, and this affected investment in other sectors. The restrictions imposed on imports because of political practices led to the decline in imports, especially those relating to agricultural activities such as machinery, fertilizers, pesticides and other facilities. The general goals for the agricultural sector were therefore known, but the mechanism for achieving them and the supporting policies for the annual plans were completely absent (El Messallati, 2007).

The aims of agricultural policy in Libya during this period can be summarized as follows:

1. Increasing agricultural production.
2. Increasing the efficient use of natural and economic resources.
3. Constructing agricultural establishments in the field of poultry, cattle and the formation of nurseries and greenhouses to increase agricultural production.

4. Maintaining the policy of agricultural credit to farmers on short, medium and long-term basis.
5. Giving ownership of some agricultural enterprises and production units to workers who worked in these establishments.
6. Distributing reclaimed farmlands to those with low income to reduce migration to the cities, and also to improve their incomes.
7. Encouraging the establishment of agricultural associations to provide inputs such as animal feed, fertilizers and seeds (AOAD, 2000), (El Shiakhi, 2009).

A: Framework of agricultural policies: 1986-2007

Agricultural development programmes during this period focused on increasing agricultural production and promoting the efficient use of natural and economic resources and the establishment of agricultural cooperatives in the areas of poultry, cattle, nurseries and greenhouses and agricultural credit. In addition, ownership of some agricultural enterprises and production units were entrusted to individuals. By these strategies, many sub-policies on agriculture were developed and are summarized as follows:

Policies related to crop production

These were aimed at reducing the differences of production costs between agricultural regions and adopting the principle of comparative advantage to increase production.

Policies on horizontal and vertical expansion

The government was interested in both vertical and horizontal expansion and focused on the application of sophisticated methods and promoted agricultural extension.

Policies related to animal and fish production

The government's programme of animal and fish production was through the construction of complexes for poultry and cattle in agricultural regions for the production of poultry, eggs, beef, milk and yogurt. There was also fish production complexes aimed at self-sufficiency in fish production (AOAD, 2000).

Policies related to land resources

The purpose of these policies was to classify agricultural lands according to with their characteristics and processes of production. Fragile lands were identified and farmers assisted in taking action to identify and improve lands suitable for reclamation and aquaculture (AOAD, 2008).

Policies on animal and fish production

These policies were aimed at establishing production complexes for poultry, cattle and sheep in most agricultural regions in order to provide poultry, eggs, meat and milk. These complexes were designed to provide services to fishermen, such as giving them licenses to practice the craft of fishing, providing them with traps and harbours so as to produce an adequate amount of fish for consumption (El Shiakhi, 2009).

Policies of crop structure

The aim of these policies was to reduce the differences in the cost of production in different agricultural areas. For example, even though wheat was a strategic crop, it faced competition from barley and fodder crops. A special fund was therefore set up to promote the production of wheat and also provide it with a guaranteed market price that gave the production of the crop a comparative advantage over other traditional crops (AOAD, 2008).

Policies on water resources

The aim of these policies was to reduce the deficit in water requirement and also minimize the deterioration of water quality. The policy focused on consumer awareness creation, licensing restrictions on borehole drilling and working in areas threatened by water shortages (AOAD, 2008).

Policies on pastoral and forest resources

The purpose of these policies was to protect pastures and agricultural lands from encroachment of the desert through avoidance of over-grazing, increase plant cover and work to restore and develop natural forests, which had been exposed to erosion.

Policies on foreign trade of agricultural products

The general principle of foreign trade policy in Libya at that time was based on the principle of specialization in products with high competitive advantage in terms of both quality and quantity. The export development centre in Libya was therefore established to regulate import and export operations and to identify the main challenges to export and import processes such as quality, standard specifications, marketing information, production and marketing costs (AOAD, 2008).

Agricultural production during this period, as shown in Table 3.8 below, saw an increase in the production of vegetables and fruits, despite unfavourable climatic conditions and the increase in population growth. Increases in the production of grain, fodder, meat and dairy products were very limited (El Messallati, 2007).

It can be argued that studies and literature focus on Libyan agricultural policies are very rare. This research will be the first attempt to fill the current gap in the literature. Few studies adopted a single perspective in assessing agricultural policies such as El Messallati (2007), which focused on the importance of agricultural policies in Libyan GDP. El Shiakhi (2009) focused on the importance of pricing policies while Abdulgader (2005) conducted a study into the importance of agricultural policies in food security.

Table 3.8 Agricultural production in Libya for the period 2000-20007 (1000 tonnes)

Crop / Year	2000	2001	2002	2003	2004	2005	2006	2007
Wheat	64.00	49.00	54.00	46.00	61.00	48.00	46.00	42.00
Barley	264.00	230.00	263.00	175.00	132.00	234.00	240.00	244.00
Legumes	3.00	2.60	2.80	2.87	3.10	3.15	3.20	3.50
Vegetables	1226.00	1226.00	1239.00	1256.00	1321.00	1254.00	1258.00	1260.00
Fruit	365.00	365.00	365.00	365.00	361.00	367.00	380.00	386.00
Olive oil	27.55	26.00	27.60	26.50	23.00	25.00	24.00	22.00
Meat	163.00	167.00	171.00	175.00	179.00	183.00	186.00	189.00
Dairy M.L	270.00	278.00	286.00	294.00	302.00	310.00	310.00	310.00
Eggs M	800.00	826.00	854.00	873.00	902.00	932.00	900.00	900.00

Source: El Shiakhi (2009)

Accordingly, this study is the first attempt to assess the agricultural policies, which is supported by a comprehensive perspective, based on tri-angulation evidence. In addition, in the literature there was no accurate assessment of methods of evaluation of agricultural policies in Libya: thus, the involvement of stakeholders in the assessment of agricultural policies in Libya in this study is unique. Moreover, the review of literature shows that very little research has been carried out to understand how agricultural policy formulation in Libya has been based on the correct principles to achieve the objectives of agricultural development. This study contributes to the academic and scholarly debates on this topic, in a region that has, as yet, received no attention: Libya.

Finally, current literature on the Libyan context indicated that Libya adopted two main approaches to agricultural policies: medium-term approach (1973-1985) and the annual approach (1986-2007) (Al Arbah, 1996; GPCT, 1996; El Messallati, 2007; and El Shiakhi, 2009). Nevertheless, no studies have yet attempted to address the impact of these approaches on the agricultural sector in Libya and the reason behind the change in policy approach. In addition, no studies have been conducted to understand and elucidate the decision making mechanisms that operate in the Libyan agricultural sector, and thus this study is may be considered the first attempt to address such issues.

3.4 Oil discovery and Libyan agricultural development

According to Ghanem (1985), oil was discovered in Libya in 1955 with production starting in 1956. The first well was in the Western Fezzan. In 1961, the first oil was carried by pipeline from an Esso allowance at Zalten to its 'sell abroad facilities' at Marsa al Buraygah. In spite of providing direct employment for fewer than 20,000 Libyans in 1984, the oil industry has been considered the dominant field for the entire economy since the nineteen-sixties.

Since the nineteen-nineties, the implications of the discovery of natural resources on the overall economy has been a matter of concern; and effective ways of managing natural resources have been sought (Kasprzyk, 2011). These have given rise to a considerable literature on the subject. Studying the relationship between social and political structures, institutions and policy options generally has been the main concern of the literature and this section

pays particular attention to the Libyan experience with special emphasis on agriculture.

Delvin and Lewin (2002) stated that there are a number of economies around the world which find themselves in terrible economic circumstances and misuse their resources in spite of the fact that they are supposed to provide the whole population with comfortable living. According to Barnett and Ossowski (2003), due to the difficulty of predicting highly unstable oil price revenues and the necessity of planning for when the oil runs out, several problems have been encountered by those oil-producing countries, particularly in the management of their economies. Most countries in which natural resources, especially oil, have been discovered, suffer from problems in the long term development process. This differs from those countries possessing other natural resources such as agricultural products. Moreover, economies with large oil, gas or mineral endowments suffer very high poverty levels (Lynn, 2005).

Fasano and Iqbal (2003) noted that the positive effects, which began to appear with the oil discovery, were accompanied by challenges. A call for a continued fall in GDP, investment in human capital, and institution improvements was made via the high-speed local labour force. Furthermore, Collier (2003) stated that several developing countries have shown that natural resource revenues have been a missed opportunity that has given way to stagnation and corruption. According to Wantchekon (1999), these revenues gave rise to incumbency advantage, weak democratic governance and socio-political instability, which spread throughout the economy. He also proposed that the level of dependency on natural resource revenues is the vital determinant of African and Asian political regimes. Likewise, Subramanian (2003) asserts that due to poor economic management, many countries do not benefit from their oil and gas endowment.

Apart from the iron ore found in the Wade ash Shati, in the south-central part of Libya, few minerals in quantities sufficient for commercial use existed in Libya at the time of independence. There was little energy potential due to the lack of coal and hydroelectric power. In the modern sense, few exports existed because of the lack of industry and limited agriculture: accordingly, it was not

possible to initiate an exchange for the imported commodities the country required. An additional problem during the nineteen-seventies was the dearth of Libyan experts in the labour force. Moreover, at the time of the independence, there was widespread illiteracy, a low-skilled labour force, and a lack of technical and management expertise in organizations Ghanem (1985). Consequently, Libya has long depended on the foreign workers in spite of heavy government spending on the training of the Libyan labour force. The number of nomadic and semi-nomadic people who lived in Libya was higher than the settled population; and the high rate of birth further increased the country's poverty.

According to El Messallati (2007) the rapid growth in population affected the economy of agriculture and the inexperienced workers drifted into the city centres, where there was a shortage of labour as well as unsatisfactory or inadequately paid employment. One of the key problems that slowed improvement in agriculture was the unavailability of cultivable land, due to a lack of water supplies (irrigation) and poor utilization of modern farming techniques. Agriculture had played an essential role in the improvement of the Libyan economy, particularly at the time of independence. Tree crops and livestock products provided raw materials for much of the country's industrial sector, as well as exports, employing more than 70% of the labour force and providing approximately 30% of the GDP, even though agriculture was mainly reliant on climatic conditions. Degradation of cropland and overgrazing of meadows, the use of primitive tools by farmers, and consequent soil erosion were common.

Furthermore, most agricultural areas were operated on a tribal basis, and were inadequately utilized. It was difficult for people to predict rainfall, which is scarce and sporadic. Sometimes it was extreme and its use in irrigation was difficult because it had turned saline in some areas. There was restricted potential for irrigation and hydro-electric power due to lack of rivers. At that time, the plentiful and bottomless water supplies situated in the lower Sahara had yet to be discovered. Agriculture was still considered significant for employment opportunities as it provided for many people in spite of its low contribution to the GDP (El Azzabi, 1974).

The gap between Libya's requirements and its household resources was bridged via international and other foreign organizations, such as those in the United States, Britain and Italy from the nineteen-fifties up to the beginning of the nineteen-sixties. Nonetheless, in order to place the economy on the path to rapid self-sufficiency, the foreign community could not undertake an across-the-board and continued expansion programme. Thus, it was difficult for the country's administrative machinery to use all the available resources from abroad during the nineteen-fifties (Vandewalle, 1996). Accordingly, Libya started to develop along the lines of a double economy, a model in which there emerged two separate economies, alongside one another - petroleum and non-petroleum, particularly after the discovery of oil. The only link that appeared between them was that the petroleum companies employed a restricted number of workers and paid the government part of their profits in royalties and taxes. Financial decisions, which influenced the activities of the petroleum economy, came from outside the country, not from the local non-petroleum economy (World Bank, 1994).

Vandewalle (1996) states that the history of the independent Libyan economy can be dated from the fall of the oil prices, as well as its entry into the universal oil market in 1981, a period of over-abundance. This decrease in oil prices had a real impact on the Libyan economy. Due to the price shock of the Organization of Petroleum Exporting Countries (OPEC) in 1973, declining Libyan oil revenues reached their lowest level in 1985. Furthermore, small reductions in the Libyan economy were made due to the fall in oil revenue, which was more than 57% of the entire GDP in 1980 and, from which, the government had taken over 80% of its revenue in advance. Between 1980 and 1981, 14% was the average of the decreasing real GDP, which continued until late 1986. In the late nineteen-eighties, the reversal of the negative trend in real GDP development was unexpected. It was feasible to achieve an overwhelming and a long-lasting success in the landlord-state due to the high importance of oil within the world economy and the arbitrariness of geology in concentrating the world's most productive reserves in a handful of third world countries (Ghanem, 1985).

The World Bank (1994) indicated that the Libyan economy relied completely on oil revenue; therefore, Libya became a small oil-producing developing economy in the Middle East. Since it is a member of OPEC, providing oil to the world market is one of its main roles. Producing considerably cheaper oil than many other oil producers was due to some geological factors such as the location of the onshore oil fields near Europe, flow of oil toward the sea and the effortlessness of drilling (Alfourjani, 2005). The Libyan oil market has increased because of the central geographical location of Libya, between the developed economies in the West and the growing economies of North Africa, which resulted in considerably lower transport costs. OPEC (2006b) affirms that every member within OPEC produces about 7% or 1.7 million barrels of oil each day. In late 2005, 41.5 billion barrels was the estimation of the Libyan oil reserves, which is 5% of the OPEC members' reserves. The United Nations Security Council (2003) asserts that because of the international sanctions, the economic condition of Libya deteriorated in the nineteen-nineties. In isolation from the outside world due to UN sanctions in 2003, the continuous improvement of the Libyan market economy has been slow and unreliable in spite of the country's re-joining of the international community and the measures adopted to change and open up its economy.

To meet the requirements of Libya's fast growing labour force, powerful and constant economic development is necessary. This could be achieved with high investment in physical and human capital and a better-organized utilization of the country's resources. High oil prices have their own impact in accomplishing such goals. Vandewalle (1998) points to the harm done to the non-oil sectors of the Libyan economy by its oil sector during the hydrocarbon booms. By the beginning of 2010, it was projected that oil production in Libya would increase sharply, as high as at its peak in the nineteen-seventies, at 3.3 million barrels a day. Yahay (1980) and Abohobiel (1983) stated that as long as Libya relied on its oil revenue, oil price fluctuations would have a strong impact on its economy. Various researchers have conducted studies related to the effect of oil price variation on the economic performance of Libya. According to Hunt, Isard and Laxton (2002), it is possible for a high oil price to affect the economic activity via various channels, the labour market being one of them. However, the International Monetary Fund (2008) declared that there is a lack of

diversification in the Libyan economy, so it is difficult to decrease its dependency on the oil sector. Decreasing its dependency on short-lived and potentially volatile oil revenue is one of the hard tasks faced by Libya.

Therefore, ensuring a stable rise in the living standards of the Libyan population requires managing the revenue in a way that permits for the diversification of its economy. Since the oil sector does not provide much employment, it only employs 11% of the Libyan force, and due to the nature of the boom, it is necessary for Libya to diversify its economy. Managing the transition from a planned to a market economy and dealing with this oil wealth are two problems facing Libya (Vandewalle, 1998). Currently, Libya has used its windfalls and avoided the possible dangers of its oil discovery. This is considered to be the first step on the pathway to market improvements. In short, key to assisting the improvement of the Libyan economy is the oil sector, particularly as it provides the monetary excess to finance socio-economic development plans. Oil revenues have led to a wide change in all economic functions of the country's population and physical resources; and these have influenced all aspects of life for the Libyan population. Such change leads to a number of unified factors (Ghanem, 1985).

One of these consistent factors is the government interference strategy, which has played a major role in the grand changes of growth in the Libyan economy since 1970. This distributed enormous funds to productive sectors such as agriculture, industry, tourism and infrastructure, which, in turn, during the national social-economic growth plan 1970-1985, transformed the country's economy from a traditional to a modern, more diversified economy (Alfourjani, 2005).

In conclusion, considerable controversy still rages about the resource curse, or the so called 'Dutch Disease'. Ammani (2011), Stevens (2003), Martin and Subramanian (2003), Gylfason (2006), and McPhail (2008) argued that despite the fact that the discovery of oil brought many benefits to the economy, at the same time it also presented many challenges to other sectors, including the agricultural sector. No study has yet been carried out to show how oil sector impacted on the performance of the agricultural sector in Libya. Moreover, no

study has been carried out to show that, due to the discovery of oil, agriculture is no longer constitutes the focal point of economic policy in many Middle Eastern countries.

3.5 Chapter summary

Few studies adopted a single perspective in assessing agricultural policies in Libya. Instead they have examined them by considering: the importance of agricultural policies to the Libyan GDP, the importance of pricing policies, and the importance of agricultural policies in food security: no study has yet undertaken a comprehensive assessment of Libyan agricultural policies and the involvement of stakeholders in the assessment of agricultural policies in Libya: accordingly, this study is unique. Moreover, the review of literature shows that very little research has been undertaken to establish how agricultural policy formulation in Libya has been based on principles suited to achieve the objectives of agricultural development.

The current literature on the Libyan context indicates that Libya has adopted two main approaches to agricultural policy: the medium-term approach, which was in place from 1973 to 1985; and the annual approach, effective from 1986 to 2007. However, no study has yet aimed to address the impact of these varying approaches on the agricultural sector in Libya, and the reason behind the change of approach to policy. In addition, no research has yet been conducted to identify and outline the mechanism of decision-making in the Libyan agricultural sector.

In addition, a considerable and controversial debate about the resource curse, or 'Dutch Disease' as it is sometimes called, has concluded that despite the fact that the discovery of oil has brought many benefits to the economy, it has at the same time also presented many challenges to other sectors, including the agricultural sector. It has been noted that agriculture is no longer central to the economies of many Middle Eastern countries. This is due to the discovery of oil, and the fact that many Middle Eastern countries now rely heavily on oil as a source of their GDP.

The critical assessment and analysis of literature, outlined in Figure 3.6 below will be conducted using the tri-angulation process, in Chapter Four, that is, the methodology chapter. In Chapter Seven, the literature findings will be examined alongside and in relation to the research findings presented in Chapters Five and Six.

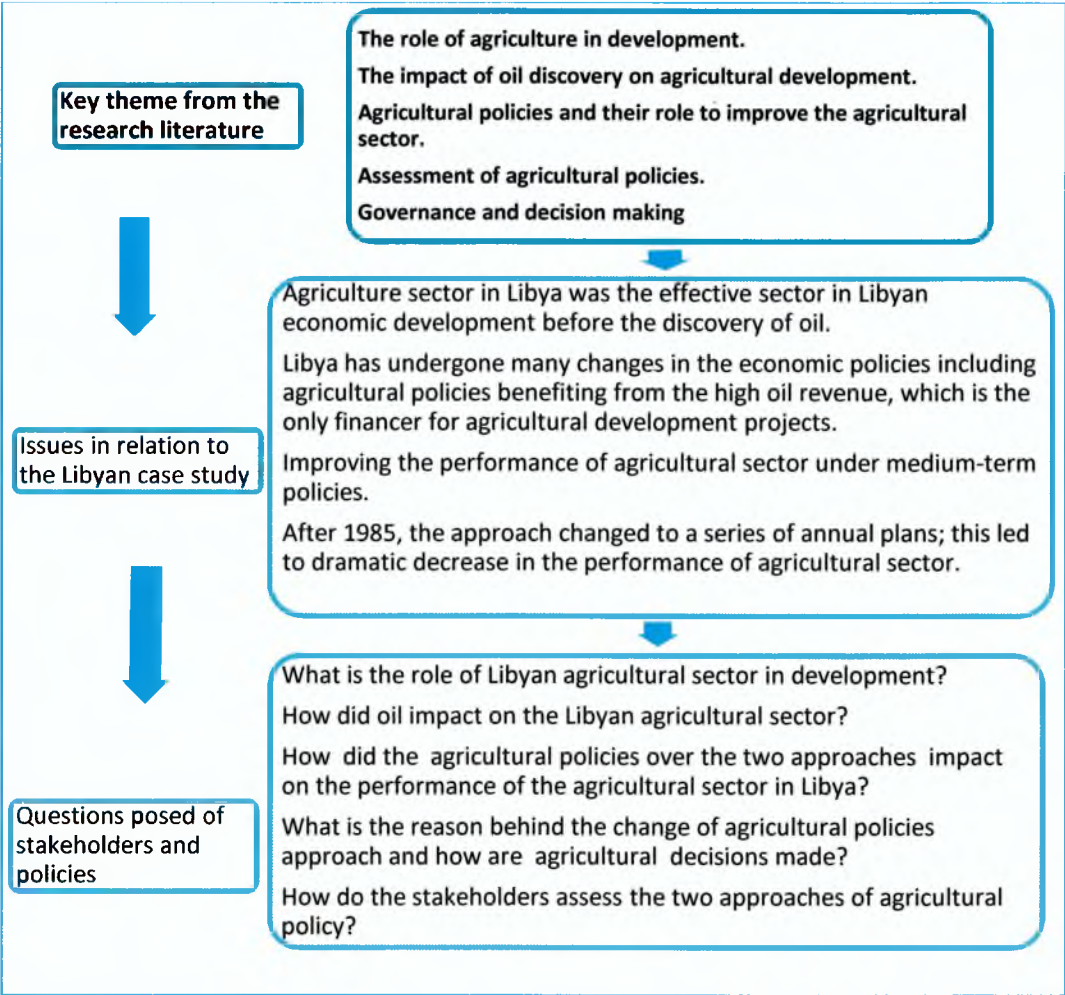


Figure 3.6 A critical assessment and analysis of the literature

CHAPTER FOUR: METHODOLOGICAL APPROACH

4.0 Introduction

This Chapter discusses the research methodology that was adopted to answer the research questions. The researcher adopted a pragmatic philosophy in order to fully explore the research questions. The research design, the quantitative and quantitative data collection methods adopted is discussed in the sections of this chapter. The process of reviewing public documents to collect information on current agricultural policies is also explained and ethical and professional issues associated with the conduct of the research are presented in this chapter.

4.1 Research Scope

The Libyan agricultural sector has undergone many policy changes during the last three decades. In the initial period 1973-1985, a set of policies, plans and agricultural programmes were implemented: these were from the three-year plan (1973-1975) and the two five-year plans (1976-1980 and 1981-1985). However, since 1986, a longer-term strategic approach involving annual implementation has been used for the sector. This research will be divided into two periods in order to analyse the different approaches to agricultural policies that have been applied during these respective periods: the two periods are the 1973-1985 and 1986 and beyond.

4.2 Research philosophy

According to Johnson and Clark (2006), selecting appropriate philosophy for research is one of the most important steps of the scientific research, because it has essential impacts on the next steps of the research. Hughes (1994) also pointed out that the philosophy of research helps to identify the appropriate methods to use in a research project. Research philosophy can be divided into four types according to Saunders, Lewis and Thornhill (2009). The four types are positivism, realism, interpretivism, and pragmatism.

These benefits will be explored to achieve the aims of the research. Pragmatic philosophy research approach has been chosen for this research and is based on the claim by Halter and Jack (1961) that a pragmatic philosophy is most

appropriate for agricultural economic research aimed at formulating objectives of agricultural economies. Thus, pragmatic philosophy is appropriate for achieving the aims of the study. Pragmatic philosophy has been chosen for this research due to important benefits of the philosophy, which are:

- 1) The research results can be combined and compared
- 2) It allows assessment of the research issue from different perspectives
- 3) Compensates for weaknesses in quantitative or qualitative data
- 4) It helps to uncover inconsistencies on the same research issue.

4.3 Research approach

Adopting a pragmatic philosophy for the research allows the use of a mixed methods approach in data collection. Tashakkori and Creswell (2007) defined this approach as *“research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry”* (p.4). Mixed research method is a useful approach because it allows a researcher to use different data collection methods to improve the validity of collected data. Denscombe (2008) stressed that using more than one method has the advantage of providing a fuller or more complete picture about the issue that is being studied. For instance, the use of questionnaire alone cannot provide the same depth of information as semi-structured interviews. Therefore, researchers can integrate both the quantitative and qualitative approaches in data collection in their research, when they cannot depend on either one of them (Bryman, 2008). Bryman (2006) stated that many researchers have stressed that both quantitative and qualitative research can be integrated at different stages of the research process: formulation of research questions; sampling; data collection and data analysis. The use of the mixed methods approach improves the quality of the research (Gorman and Clayton, 2005).

The reason for choosing a mixed method approach for this study is that it allows flexibility in the reliable testing of theory; interpretation and prediction of observable facts (Collis and Hussey, 2003; Saunders, Lewis, and Thorn hill, 2009). The mixed method approach uses both deductive and inductive methods. The value of the hypothetico deductive approach is providing ability to use of previous researchers work. in addition, using quantitative approaches

can have many benefits such as allowing the researcher to make inferences about a large group of elements by studying a relatively small number selected from a larger group (sampling technique) (Bryman, 2008). The deductive approach is characterized by a set of properties such as the method for gathering quantitative data, making numerical estimates and statistical inferences. On the other hand, inductive approach is more commonly used in qualitative research (Strauss and Corbin, 1990).

The value of the hypothetico-deductive approach enables the researcher to use the work of previous researchers. In addition, using quantitative approaches can have many benefits such as allowing the researcher to make inferences about a large group of elements by studying a relatively small number selected from a larger group (sampling technique) (Bryman, 2008). The inductive approach helps the researcher in facilitating the understanding of complex data and information through categorization or summarizing data into themes. Thomas (2003) stated that the main purpose of the inductive approach is to transform raw data into a brief text or to link the summary of research results that were obtained from the raw data, with the objectives of the research. Thus, for this study, using different sources of data enabled the collection of a large quantity of data on a wide range of elements from a sample of the research population, about which generalizations could be made. It is more practical to adopt both deductive and inductive approaches to data collection in this research in order to achieve the aims and objectives of the research.

4.4 Research strategy

The main objective of the study is to explore the issues of agricultural sector development with regard to government policies in emerging economies and to address this issue through a case study of Libya by exploring the role of agricultural policies in the development of the sector. The aim of the research is also to make recommendations that will help improve the performance of the agricultural sector in Libya, which has seen changing agricultural policies over the years. Data collection for case study includes interviews, questionnaire observations, and documentary data analysis (Saunders, Lewis and Thornhill, 2003). Data collection techniques applied in this research included documentary data and primary data, collected through a variety of sources using quantitative survey and interviews. Details of these are described in Section 4.5 below.

Libya was used as a case study in this research since the researcher is a native of Libya and thus was very conversant with the research context. A drawback with this strategy is that a generalization of findings may have challenges because the research focused on the details of a particular issue under study within certain circumstances (Stake, 1995). To overcome this challenge the researcher triangulated data from different perspectives to be able to generalize the finding and the recommendations to similar countries that have similar condition of Libyan economy.

4.5 Research method

The use of appropriate research methodology is essential for the effectiveness of any research. 'The researcher has to know and select the appropriate method for addressing the needs of the research question and has to make a decision and choose the right method for the study' (O'Leary, 2004, p.162). Particular attention was paid to the methods used to gather information in this research (See' Buckley, 2007).

Strauss and Corbin, (1990, p.17) point out that there are many reasons to rely on qualitative research methodology. Qualitative research methods are used to interpret the phenomenon in greater detail and depth than previously known and can also obtain additional information and lead to further unanticipated insights. Through qualitative research, one can obtain more in-depth information than that which could be obtained from quantitative research (Strauss and Corbin, 1990). In addition, qualitative research is useful in order to investigate what variables could be tested later in the study or in further research, or where quantitative methods are not able to describe and interpret a particular phenomenon. In terms of the methods used in qualitative research, they are characterized by the openness of response. In interviews, for example, the use of open questions gives the respondent the opportunity to respond freely; closed questions on the other hand impose a limit on the response or restricting respondents to selecting from among several answers. Open questioning also gives the researcher the opportunity to receive feedback from participants through questions such as "how and why".

4.6 Mixed methods approach

In order to achieve the objectives of the research, a mixed methods approach was adopted. The reason for adopting a mixed-method approach for this research was to gain a fuller understanding of the research problem. Again, the use of mixed methods in this research was to allow the use of multiple data sources with similar foci to obtain diverse views about the research problem for the purpose of validation.

4.6.1 Interview with farmers

Testing people's opinions about certain aspects of the subject was a major part of the data gathering for this research. Individual interviews were considered as an appropriate approach instead of focus group interviews since it would have been difficult to get the interviewees in one location at the same time. The selected methods used will help answer the research questions and to achieve research objectives.

Interviews were conducted with farmers who were selected non-randomly based on the diversity in the nature of activities of the farmers such as irrigated or rain-fed farms and livestock farms.

4.6.2 Questionnaire survey with policy makers and farmers

The questionnaire survey was considered an appropriate method because of the expected high number of respondents (policy makers and farmers) that were involved in the research.

Both interviews and questionnaires were used to collect data in the research because the kind of data collected from questionnaires is distinct and different from those obtained by interviews, observation, or from reviews of documents. The information from questionnaires tends to fall into two broad categories: 'facts', which do not require much in the way of subjective judgement or personal attitudes on the part of respondents. In addition, questionnaire survey is appropriate when gathering information from large numbers of respondents (Denscombe, 2008).

4.7 Site selection

In order to carry out the research, a site had to be chosen. The Al Jabal Al Akhder region was selected for this research. This region was selected for several reasons. First, the climatic conditions and natural resource endowment

make this region one of the largest agricultural areas in Libya. Second, more attention has been paid to this region regarding agricultural policies and programmes due to the availability of agricultural lands and appropriate amounts of rain for agricultural activity.

The Al Jabal Al Akhder region is a mountain range along the northern coast of North-eastern Libya. It is located approximately 31° N, and 23° E, with a total area of about 20,000 km². The region is labelled as 1 in Figure 4.1 below.



Figure 4.1 Map of Libya showing Al Jabal Al Akhder Region

Source: El Messallati (2007)

The population of the Al Jabal Al Akhder region is estimated to be about 725 thousand inhabitants according to the general census taken in the year 2009. The area is an important for grain production because of a favorable climate and high rainfall: the average rainfall in amounts to about (200-550) mm per year (Simpson and Hunt, 2009). The cultivated area of barley varies from year to year, reaching about 57.5% of the total cultivated area of Libya. Thus, the Al Jabal Al Akhder region is an appropriate area in which to conduct studies on the Libyan agricultural sector.

4.8 Sampling process

This section discusses the sampling techniques used in the selection of respondents for this research. Sampling is the process whereby part of a research population is selected for a research. A sample is defined as a group of respondents from whom important information can be obtained about a study and that information has to reflect the population's views (Webster, 1985).

4.8.1 Interviews with farmers

Interviews were conducted with farmers on the assessment of agricultural policies. Due to political conditions in Libyan during the period of field study (Revolution of 17th February), only 10 farmers were chosen as a sample from Al Jabal Al Akhder region.

4.8.2 Questionnaire survey with policy makers

Twenty respondents were selected from the Ministry of Agriculture, Agricultural Bank and the Agricultural Research Centre. To get a comprehensive assessment for agricultural policies, census survey has been adopted in this study where all members of the committee have participated. Table 4.1 below shows details of respondents selected.

Table 4.1 List of research participants

	Number	Description
1	1	Minister of Agriculture
2	1	Manager of the Agricultural Bank
3	10	Advisers of the Ministry of Agriculture
4	1	Director of Agricultural Research Centre
5	7	Advisers of the Agricultural Research Centre.
Total	20	

4.8.3 Questionnaire survey with farmers

There are many factors that can be used in selecting a sample size. For instance, study purpose, population size, risk of bias and allowed error (Thompson, 1999). According to Israel (1992) there are three types of strategy to determine the size of a sample, namely: 1) a census for small populations 2) a sample size of a similar study 3) using published tables. The size of the sample used in this research was based on published table of farms by the

Ministry of Agriculture. The number of farms in the study area, Al Baida, is 445 according to the table. This is the main agricultural area and represents about 46.21% of total farms in the Al Jabal Al Akhder region (El Shiakhi, 2009).

The sample for research was selected according to the experience of farmers in order that they may be able to comment on the implication of past policies on agricultural activities. Time and the effort were the most restrictive factors in increasing the number of participants because it takes a long time to conduct interviews and, in addition, the period of fieldwork was during the events of the Arab Spring revolution in 2011. Questionnaires were distributed to farmers using a non-random sampling method. The questionnaires were designed to:

- Assess the agricultural policy and its impact on performance at farm level
- Examine the state's interest in the agricultural sector at the farm level.
- Determine the nature of the agricultural decision at farm level.
- Identify the relationship between officials and small farmers.
- Evaluate farmers' participation in agricultural decision.

Questionnaires were also distributed to a second research sample was made up of fifty farmers from the Al Jabal Al Akhder region. These questionnaires were aimed at obtaining information of the agricultural sector at farm level, the farmer's assessment and views on agricultural policy, and the challenges they faced in engaging in agricultural activities. Copies of the questionnaires are attached as Appendix A.

Questionnaires were distributed to the respondents. The questionnaire was developed using a Likert and rating scales, which helped the respondents to explain their opinions in terms of strength and direction. (See, Saunders, Lewis and Thorn hill, 2009). Therefore, the questionnaires were distributed and collected personally. The questionnaires were distributed and collected personally by the researcher.

4.9 Document analysis

Another data collection tool used for the research was document analysis. Document analysis is a research tool, which allows researchers to analyse

written materials related to the area of research. This method involves reading and analysis of specific documents such as public records, the media, private papers, biographies and visual documents (Saunders, Lewis and Thorn hill, 2009). As part of the research, agricultural policy documents were analysed to find out how and why they were formulated and implemented.

The researcher used this method to collect data in order to create a time series for some indicators such as GDP, agricultural GDP, per capita of agricultural GDP, cultivated areas, loans, employment and agricultural exports and imports. The time series will help evaluate the performance of the agricultural sector, identify the general trends of the above indicators and to find out the impact of agricultural policies on the performance of agricultural sector in different time periods. The documents used in the research were collected from the Ministry of Agriculture, the Central Bank of Libya and from international sources, such as Arab Organization for Agricultural Development and the Food and Agriculture Organization.

The researcher reviewed the documents in order to understand the development of agricultural policies and their contribution to the Libyan economy and the possible influence policy changes had on agricultural performance.

4.10 Data analysis strategy

This section introduces how the data collected were analysed to assess the performance of the agricultural sector. Statistical Package for the Social Science (SPSS, version19) has been used in the analysis process

Some performance indicators related to agricultural resources and others related to the contribution of the agricultural sector at the macroeconomic level during the two periods of the study were analysed using statistical and econometrics tools. Table 4.2 shows the analysis techniques used which includes:

- Time Series
- Linear Regression
- Multiple Regression
- Binary Logistic Regression
- Cobb Douglas Function

Table 4.2 Techniques and the variables used

Technique	Variables	The purpose	Type of used data
Time series	Agricultural resources (human resources, capital resources and land resources)	To examine the agricultural resources in terms of trends and evolution over the time periods of study	Documentary data
	Agricultural GDP <i>Per capita</i> of agricultural GDP Agricultural imports Agricultural exports	To assess the agricultural performance at macro level in terms of trends and evolution over the time periods of study	Documentary data
Linear regression	GDP and agricultural GDP	To assess the relative importance of the agricultural sector in the Libyan economy (GDP)	Documentary data
Multiple regression	Agricultural performance and socio-economic factors	To examine the relationship between annual gross sales and age, level of education and experience	Questionnaire data
	Agricultural performance and agricultural factors	To examine the relationship between annual gross sales and farm size, number of workers, fertilisers, and agricultural policy	
Binary logistic regression	Agricultural performance at farm level and some factors related to agricultural policy.	To investigate the relationship between agricultural performance at farm level and state interest, infrastructure, cooperative societies and market conditions	Questionnaire data
	Agricultural performance at farm level and agricultural policy	To investigate the relationship between agricultural performance at farm and level agricultural policy	
Cobb Douglas function	Labour and capital	To assess the returns to scale at macro level To determine the production stage To identify the importance of capital resources in agricultural production. To clarify the relationship between agricultural inputs and outputs	Documentary data
Coverage rate	Agricultural exports and imports	To examine the agricultural trade situation	Documentary data
Correlation coefficients	All variables	To determine the relationship between variables	Documentary data and Questionnaire data

4.11 Reasons for using selected techniques

4.11.1 Time series

Time series is a significant method that assists in the understanding of data trends. It is an important method that enables modelling and forecasting and simulating the data to better predict the future. It can help in the understanding of the impact of other factors like recession and unpredicted disaster and market conditions. According to Tsay (2000), the usage of time series as a statistical analysis method for economic data started in 1927. Time series analysis has been used for the following purposes:

1. To examine the dynamic structure of a process.
2. To understand the dynamic relationship between different variables.
3. To achieve and perform seasonal adjustment of economic data such as gross domestic product and unemployment rate.
4. To develop and increase regression analysis when the errors are serially correlated.
5. To create point and interval forecasts for both level and instability series.

In Econometrics, the relationships between economic variables proposed by the economic theory are usually studied within the framework of linear regression models. The data of many economic and business variables are collected in the form of time series

The time series technique has been deployed in this research because it is concerned with the impact made by varied and different approaches of agricultural policies on the Libyan economy. This technique allows the researcher to estimate not only a mean and standard difference but also to identify correlations between observations separated in time. The time series approach can be a useful tool as it allows the researcher to achieve the following:

1. Analyse the complexity of the Libyan agricultural economy.
2. Achieve better evaluation of the relationship between the agricultural economy and GDP.

3. Understand the relative importance of agricultural GDP and *per capita* of agricultural GDP over the time and how the trend has been growing over the period of time.
4. Identify the intention of quantifying the breaks that enter the regression equation and the characteristics of the changes in the trend lines.

From the foregoing, the use of the time series technique helps the researcher to understand:

- 1) The changes that occurred in agricultural Gross Domestic Production and *per capita* of agricultural production
- 2) The impact of changes in agricultural resources on productivity.
- 3) Assess the significance of the regression equation that leads in turn to an identification of the periods that have to be considered and to an investigation of the impact of those policies in the performance of the agricultural sector in those periods.
- 4) The changes that occurred in the Libyan food situation and agricultural trade balance.

4.11.2 Regression analysis

Regression analysis is used by the researcher to explore the impact of the agricultural sector on Gross Domestic Production. (See Wilfred and Edwige, 2004; Lee and Min, 2001; Nademi and Nasiri, 2011)

This was done through the use of the formula below:

$$\hat{GDP} = \hat{b}_0 + \hat{b}_1 Y + u \dots \quad \text{Where:-}$$

b₀ = Fixed value in the function

b₁ = Regression coefficient, the relationship between the AGDP (Y) as an independent variable and Gross Domestic Product (GDP) as a dependent variable, which reflect the impact of AGDP on GDP, or the change in the GDP due to change in AGDP by one unit.

Y = value of AGDP in M.LYD.

u = Random variable, and reflects the impact of factors that were not included in the function.

Regression analysis is used to investigate the impact of agricultural policies on performance at farm level. The variables are divided into economic and social factors such as age, level of education and experience as well as factors related to the agricultural process, such as farm size, number of workers, and production. Other factors analysed using this technique related to agricultural policies such as the state's interest, market conditions and the role of cooperative societies.

Prior to the regression analysis, descriptive analysis was used to determine similarities and differences among used variables. In addition, correlation coefficient is used to determine the nature and direction of the relationship between variables that affect performance at farm level.

According to Agresti (1996), regression is commonly used to investigate the relationship between economic and social variables, but the nature of the technique used is based on collected data. Tranmer and Elliot (2008) note that multiple linear regression may be used to investigate the relationship between a continuous (interval scale) dependent variable, such as income. However, socio-economic variables are very often categorical, rather than interval scale, they noted that in many cases researchers focus on models where the dependent variable is categorical” (p.20).

The researcher used continuous (interval scale) dependent variable (annual gross sales), which reflects the performance of the farm, and some independent variables such as farm size, number of workers and value of used fertilizers.

The performance at farm level as a dependent variable was expressed categorically (yes, no), therefore, logistic regression has been used to investigate the relationship between the performance at farm level and some independent variables, such as the state's interest, market conditions, infrastructure, and cooperative societies.

In addition, logistic regression has been used to investigate the relationship between the performance at farm level and agricultural policies as independent variable.

4.11.3 Cobb Douglas Function

Agriculture plays a vital role in changing the nature of any country's economic growth. This function finds the relationship between the economic growth and agriculture. Although the business literature is occupied with theories that present different economic perspectives, the Cobb Douglas production function is considered to be one of the most commonly used theories. The conventional form for this model is represented as:

$$Y = A L^{\alpha} K^{\beta}$$

Where, L symbolizes labour; K stands for capital, A, α , and β are parameters, and $0 < \alpha < 1$, $0 < \beta < 1$. A is generally defined as technical parameter, α is the productive elasticity of labour, and β is the productive elasticity of capital, that is the proportions of labour and capital in the production process, α is the proportion of labouring in total product, β the proportion of capital income in total product. μ is random error, where it has a normal distribution with mean zeros and variances.

According to Zaman *et al.* (2007), several changes have occurred in the agricultural production model due to a number of factors such as intermediate consumption and technological progress. Liu and Wang (2005) added two other factors, which they thought would have impact on agricultural growth in Hubei Province (information technology and non-technological advance factors). Also, Muhammad, Munir and Kalbe (2003) argued that availability of water and cropping intensity should be considered as the most important factors. The researcher defines Libyan agricultural long-term production function as a Cobb-Douglas production function.

4.12 Ethical considerations

According to the Social Research Association (2003), there has been a remarkable increase in attention paid to ethical considerations due to changes in the concept of human rights and the protection of data; all these changes seek to increase the level of ethical standards regarding how to deal with research participants. Ethical issues that must be taken into account are confidentiality and the risks to interviewees. Gray (2004) noted that research respondents 'should not be harmed or damaged in any way by the research.' It is also important that interviews are not used as a devious means of selling

something to the respondent' (p.235). According to Saunders, Lewis and Thornhill (2009), the general ethical issues that should be taken into account are privacy, voluntary nature, consent, deception, confidentiality, anonymity, embarrassment, stress, harm, pain, objectivity and quality of research. Ethical issues arise at a variety of stages in many research projects. They cannot be ignored because of the direct relationship between 'the integrity of a piece of research and of the disciplines that are involved' (Bryman, 2004, p.505). According to Diener and Crandall (1978), ethical principles are mainly concerned with four areas:

1. Whether there is harm to participants.
2. Whether there is a lack of informed consent.
3. Whether there is an invasion of privacy.
4. Whether deception is involved.

Although it is hard to identify the line between ethical and unethical issues in research, the researcher endeavoured to protect and respect all participants. During this research, the semi-structured interview was the most sensitive part that required ethical considerations on the issues raised above. To ensure that these issues were addressed in this research, the following factors were considered.

- Though the interviews were recorded with the permission of the participants, their names will not be mentioned in the data analysis.
- The data collected will be for the purposes of scientific research only.
- All responses will be confidential.
- The participants are allowed to answer the questions with their own freewill.
- Participants have the right to refrain from responding and withdraw at any time during the research.
- The recording tools, which were used in the interviews, are highly quality and reliable, and the recorded information will be preserved and access to it will be reserved solely to the researcher and his academic team.

- All matters of social culture nature were respected and monitored since the researcher wanted to avoid any interventions that may affect the value and validity of the data.

4.13 Research limitations

The common research constraints of finance, time and access limited the scope and scale of this study. In order to manage these constraints, the fieldwork was conducted with farmers in one particular agricultural region. Availability of secondary data was one of the difficulties encountered in this research due the lack of proper information storage and retrieval systems.

Developing a research strategy for collecting primary data in the Al Jabal Al Akhder region was a difficult and lengthy process; even more than expected due to the “Arab Spring”. It was hard work with correspondence, arranging meetings, and discussions with key stakeholders. It was difficult to focus on the area of the research by asking specific questions that examined the importance of agricultural policy and its important role in agricultural production.

4.14 Data triangulation

Information and data were gathered from a number of distinct sources. Firstly, an in-depth literature review helped to identify critical questions that set the context of the research. Then opinions and information were gathered from two separate cohorts in terms of stakeholders in Libyan agriculture and with distinctive roles and concerns in terms of Libyan agricultural policies. The stakeholder analysis identified the governmental and agency officers and staff as key stakeholders in the formulation of policy. The farmers were identified as key stakeholders in terms of policy application and their outcomes. Along with these sources of data, a rigorous and comprehensive gathering and critical analysis of documents was carried out. The researcher will triangulate data from all the sources described above as depicted in Figure 4.2 below in order to have a better understanding of how policy formulation and implementation has impacted on the Libyan agricultural sector.

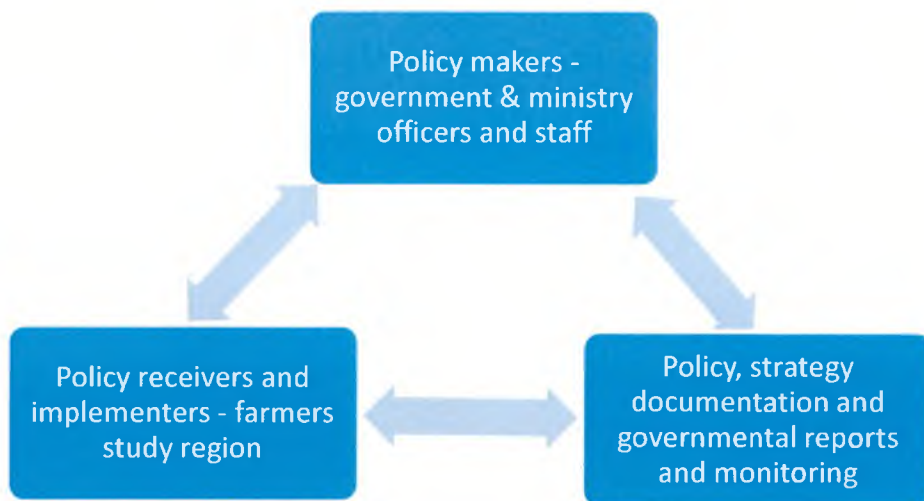


Figure 4.2 The process of triangulation (from Rotherham pers. comm.)

4.15 Chapter summary

A pragmatic philosophy was adopted for this research in order to fully explore the research questions. Thus a mixed methods approach was used in the collection of data. The collected data was triangulated in order to achieve the research aims of assessing the impact of changing agricultural policies on Libyan agricultural performance. The researcher adopted a pragmatic philosophy and a mixed methods approach because of the diversity and multiplicity of data, both quantitative and qualitative (documentary data, questionnaires and interview that could be used to explore the research topic.

The chapter introduced some statistical and econometrics tools to be used to analyse the data collected. These included Time Series, Linear Regression, Multiple Regression, Binary Logistic Regression and Cobb Douglas Function.

The next chapter analysis the data gathered through the review of documents related to agricultural policies and the performance of the agricultural sector in Libya.

CHAPTER FIVE: AGRICULTURAL RESOURCES AND THE PERFORMANCE OF THE AGRICULTURAL SECTOR IN LIBYA.

5.0 Introduction

The first part of this Chapter examines agricultural resources in Libya with regard to agricultural development. This is in line with the second aim of the research, namely to examine the key factors that influence the development of the agricultural sector in Libya.

The chapter also examines the impact of the two approaches (medium term and annual) to agricultural policy formulation in Libya for the period 1973 to 2007 on the performance of the agricultural sector. Agricultural policies within the first period 1973-1985 were of a medium term nature whilst agricultural policies within the second period 1986-2007 were annual in nature.

5.1 Agricultural resources in Libya

Economic resources have vital influences because of their close association with economic progress in all states (Gylfason and Zoega, 2002). Recently, economic resources have received great attention worldwide for reasons such as the rapid increase in population, which has led to a dramatic increase in demand for various goods and services. Economic resources are defined as any type of work or human effort or land and capital that are used for the production of various goods and services. Thus, economic resources are assets with economic value (Ikerd, 1997). The availability of economic resources has an effect on the level of economic activity and on growth, as there is a linkage between the availability of economic resources and the rate of exploitation on the one hand, and the level of economic activity and growth rate on the other. Generally, the size of economic resources gives greater flexibility in the exploitation of these resources, which facilitates further economic progress (Mogalad, 2000). Economic resources include human resources, capital, land and water. The following sections examine these in detail.

5.1.1 Human resources

Economic and social development is closely linked to the human element in all working areas. The preparation of labour, training and rehabilitation is one of the important stages in investment of available resources. Moreover, the link between human development and economic development is essential and important for the formulation of development plans. The level of employment is an important economic and social indicator, which measures the level of economic growth (Ranis, 2004). The size of human resources depends on the population and the rate of population growth (Purcell and Boxall, 2003). Furthermore, human resources are the most essential economic resources, which can be exploited as a source of production on one hand and the source of demand for goods and services on the other.

The study of population in relation to agricultural development has great importance and the distribution of age composition is a fundamental factor in the planning of economic and social development. In Libya, the average total employment during the period 1973-1985 as shown Table 5.1 was about 825.1 thousand workers (30.7%) of the total population. On the other hand, the average number of total employed during the period 1986-2007 was about 1.3 million workers (12.3%) of the total population.

Using the equation of general time trend on the figures in Table 5.2 there was a statistically significant increase in the total number of people employed in the Libyan economy of about 39.56, 49.01 thousands annually. This increased amounted to about 4.8% and 3.6% from the annual average of total employment during the two study periods respectively.

Table 5.2 also shows agricultural labour during the period 1986-2007 represented by a quadratic equation which explains that the annual change fluctuated between the ups and downs, the equation also illustrates that the number in agricultural labour increased by 14.54 thousand and then decreased by 0.87 thousand, representing about - 4% of the annual average.

Table 5.1 Population and the relative importance of the agricultural labour force in Libya during the period of 1973-1985 (1000 Inhabitant)

Year	Population	Total labour force	% of total population	Agricultural labour force	% of total labour force
1973	2052.40	538.10	26.20	129.00	24.00
1974	2128.80	607.20	28.50	131.40	21.60
1975	2228.90	677.40	30.40	133.40	19.70
1976	2322.80	732.70	31.50	141.20	19.30
1977	2420.60	764.80	31.60	144.90	18.90
1978	2522.60	772.70	30.60	147.90	19.10
1979	2628.80	789.00	30.00	150.10	19.00
1980	2739.60	812.80	29.70	153.40	18.90
1981	2855.00	946.60	33.20	162.40	17.20
1982	2970.20	1083.70	36.50	167.50	15.50
1983	3100.50	1179.50	38.00	173.00	14.70
1984	3231.10	927.10	28.70	185.50	20.00
1985	3322.80	894.20	26.90	177.60	19.90
Average	2655.70	825.06	*30.70	153.60	*18.90

Source: GPC, Management Plans and Programmes, Economic and Social Indicators (1962-2000) .Tripoli, Libya, 2001; GPC: the Economic Development of Libya (1970-2003), Elmessallati (2007).

Table 5.2 Result of statistical analysis for the equations of the general time trend of the total labour force and agricultural labour during the periods 1973 - 1985 and 1986 – 2007

Statement	Equation number	Equation	r ²
Total labour force	(4-1)*	$Y = 548.09 + 39.56 X$	0.73
	(4-2)**	$Y = 766.58 + 49.01 X$	0.85
Agricultural labour force	(4-3)*	$Y = 221.33 + 4.61 X$	0.96
	(4-4)**	$Y = 151.03 + 14.45X - 0.87x^2$	0.72

* The first period (1973-1985)

** The second period (1986-2007)

Figure 5.1 below shows that the number in agricultural labour decreased after 2000, due to the economic policies pursued in that period. The reason behind the decline of agricultural labour may be the great expansion in the use of modern methods and farm mechanization, together with the reluctance of young workers to engage in agricultural activity. Combined, these factors led to a decline in the proportion of agricultural labour.

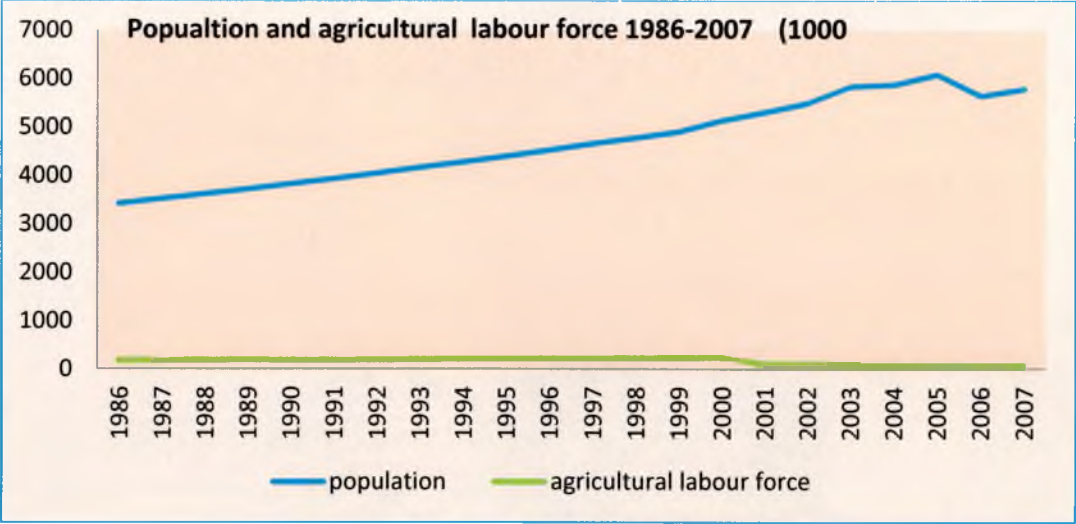


Figure 5.1 Population and agricultural labour force 1986-2007
Source: Table 5.1

5.1.2 Capital resources

Zaman *et al.* (2007) defined capital resources as machinery or tools/funds which help labour to transform natural resources into final products such as roads, machines, buildings, facilities, and commodities under storage for the purpose of increasing and expanding production. Capital resources contribute to increase economic growth through increased rates of use of existing capacities and improving production technology. Moreover, technical progress leads to increased productivity of resources, including capital, and also leads to increased production without the need to increase the economic resources used. According to Abdulgader (2005), the Libyan economy is characterized by the availability of financing potential compared to the economies of other developing countries. This is because the state has been able to use oil revenues to finance economic and social development and infrastructure construction. Thus the oil sector played a key role in economic development during the early stages of development planning (El Messallati, 2007).

Table 5.3 below shows that development allocations reached about 59,503.9 M.LYD during the period of (1973-2007), while in the period 1973-1975 the allocations were approximately 2,586 M.LYD, with an implementation rate about 85.2%. Development allocations increased during the period of 1981-1985 to about 11,780 M.LYD, with an implementation rate of 90.8%

Table 5.3 Allocations and actual expenditure on development in Libya during the period 1973 – 2007 M.L.Y.D

Period	Allocations	Expense	% of implementation rate.
1975 -1973	2,585.9	2203.0	85.2
1980 -1976	8,813.2	8259.0	93.7
1985 -1981	11,780.0	10692.8	90.8
1990 -1986	7,075.6	4153.3	58.7
1995 -1991	5,349.5	2351.0	45.7
2000 -1996	5,527.0	4328.3	78.3
2003 -2001	8,920.0	7215.7	80
2004 – 2007	9,452.7	7920.0	83

Source: Central Bank of Libya

5.1.2.1 Agricultural financing

Agriculture in Libya was self-financed and did not depend on borrowing from external sources or deficit financing which leads to external debt and high debt service (GCP, 2003). Oil revenue is the main source of funds for agricultural development programmes.

Table 5.4 Investment spending and the agricultural Investment expenditure of transition budget during the period of 1973-1985 M. LYD

Years	Total investment expenditure	Agricultural investments expenditure	% of total investments expenditure
1973	413.80	88.90	21.50
1974	866.00	223.90	25.90
1975	923.20	242.20	26.20
1976	1187.30	288.10	24.30
1977	1280.30	263.70	20.60
1978	1371.30	281.80	20.50
1979	1868.80	379.70	20.30
1980	2551.60	489.90	19.20
1981	2872.60	487.50	17.00
1982	2365.90	308.60	13.00
1983	2096.30	252.90	12.10
1984	1834.70	262.30	14.30
1985	1523.30	182.80	12.00
Average	1627.30	288.64	* 18.40

Source: Central Bank of Libya: Annual Report, Tripoli, Libya & (Elmessallati, 2007).

The average of investment amounts in the agricultural sector was about 288.6 M.LYD for the period 1973-1985 as shown Table 5.3 below. This was 18.4% of the total implemented investments in various economic sectors. This dropped during the period 1986-2007 to 116.11 M. LYD, representing 7.6% of the total investments as shown Table 5.4 below. Agricultural investments reduced during the period due to decline in crude oil prices on global markets (Central Bank of Libya, 2004).

5.1.2.2 Agricultural loans

Agricultural funding plays an essential role in agricultural development and provides capital for agricultural production (Potts, 1985). A large part of agricultural activity depends on agricultural loans, which are provided by the Agricultural Bank, which is considered one of the oldest and best lending institutions in Libya. In the period 1973-1985, the average value of total agricultural loans amounted to about 11.1 M.LYD that included short-term loans representing 49.6% of total loans, medium-term loans representing 34.2 % and long-term loans representing 16.1% of the total agricultural loans during that period.

Compared to the period in which agricultural policies were made on annual basis, see Table 5.5, the average value of agricultural loans during the period 1986-2007 amounted to about 76 M.LYD. Short-term loans within this period were 15.3%, medium-term loans were 30.2 % and long-term loans represented 54.4% of the total value of agricultural loans during that period. From the above, it may be seen that there has been a dramatic increase in long-term loans whilst the percentage of short-term loans has decreased. These investments provided many facilities for the productive sector such as houses for farmers. According to El Messallati (2007) since the period 1970-2000, about 12 thousand houses have been developed and about 15 thousand farms have been beneficiaries of approximately 10,500 tractors, 7.2 thousand trailers, 11,500 ploughs, and 4,000 sowing machines, 32 silos for grain storage, and 13 fodder factories. In addition, 40 cattle-breeding stations were established and 1.8 million hectares of agricultural land have been reclaimed.

Table 5.5 Investment spending and the agricultural Investment expenditure of transition budget 1986-2007
M. LYD

Years	Total investment expenditure	Agricultural investments expenditure	% of total investments expenditure
1986	1117.10	120.40	10.8
1987	788.40	105.60	13.40
1988	722.40	100.00	13.80
1989	823.40	145.10	17.60
1990	702.00	217.80	31.00
1991	723.30	236.20	32.70
1992	396.30	29.20	7.40
1993	405.20	194.90	48.10
1994	507.30	14.00	2.80
1995	318.90	5.90	1.90
1996	660.90	57.40	8.70
1997	847.10	173.70	20.50
1998	485.20	61.50	12.70
1999	794.10	53.50	6.70
2000	1541.00	141.20	9.20
2001	1539.00	149.80	9.70
2002	3701.70	183.70	5.00
2003	2664.10	121.70	4.60
2004	3581.40	104.00	2.90.00
2005	5996.90	106.00	1.70
2006	6854.50	108.00	1.50
2007	7718.70	125.00	1.60
Average	1949.49	116.11	*7.60

* Geometric mean

Sources: General Planning Council, Management Plans and Programmes, Economic and Social Indicators (1962-2000) .Tripoli, Libya, 2001.

Central Bank of Libya; Annual Report, Tripoli and Libyan Agricultural Bank

The drilling of more of 3,035 wells and the establishment of 16 dams for water resulted in a 316.7 million cubic metre increase in water storage capacity and the establishment of a network of 9250 km of paved agricultural roads (Abdulgader, 2005). During this period there was also support for farmers and agricultural projects in the form of seed, fertilizer, water reservoirs, electricity, fuel, and pesticides. In essence, the increase in long term loans during the period of the annual plans was used to provide infrastructure for the development of agriculture.

5.1.3 Land resources

According to classic economic theory formulated by Adam Smith, Ricardo and Malthus, natural resources are one of the factors that impact most on agricultural production and they can lead to a decrease in the marginal returns of labour and capital. Land is a form of capital (Upton, 1976) and its use is based on environmental aspects such as:

- 1) Population density
- 2) Technical experience and capital resources
- 3) Fertility of soil
- 4) Geographical location and markets, roads and railways infrastructure and
- 5) Pattern of land tenure.

Land is defined as a commodity when it is able to increase the productivity of labour. There are three determinants in the exploitation of land resources, including physical determinants such as physical factors and conditions that influence the quality and efficiency of land use; for example, weather conditions. Biological determinants are the spread of pests, insects and diseases. In addition, the regulatory determinants are the laws, legislation and regulations that relate to land use. In addition, customs and traditions have a tremendous impact in the exploitation rights of land resources.

5.1.3.1 Agricultural land

Libya has a total land area of about 177 million hectares, which represents the natural land resources (Abussnina, 1992). In the period 1973-1985, the size of area used for the production of seasonal crops was about 0.98% of the total land. This increased by about 1% for the period 1986-2007 (El Messallati, 2007).

The size of area used for permanent crop production was 0.18% of the total land area for the period 1973-1985. This increased slightly to 0.183% of the total land area of Libya in the period 1986-2007. The area of agricultural land used for seasonal crops was about 4,290 hectares, which represented 0.24% during the period 1973-1985 (El Messallati, 2007). During the second period of the study (1986-2007), the area of agricultural land used for seasonal crops saw

a statistically significant decrease of about 9.53 hectares per year, which represented about 0.53% of the annual average. This decrease may be due to lack of attention to reclaimed land, land that was left fallow for a number of years as well as a failure to adopt new plans after 1985 for the reclamation of land and its development, which resulted in a lower annual growth rate for agricultural land.

There was an increase in forest areas in 1977-1978 and 1984-1985 of around 75 thousand hectares. This increase was a result of agricultural investment in the first and the second plans of agricultural development. These plans made provision for the production of forest seedlings for a forestation project, the objective of which was to increase the production of wood and create a balanced environment.

Table 5.6 below illustrates that the area of agricultural land employed for pasture has significantly increased, by 148.35 thousand hectares, representing 1.17% from the annual average during the first period of the study. There was no change in the area of agricultural land used for pasture during the second period. This may reflect the important role of agricultural plans and programmes in increasing the agricultural area used for all types of agricultural activities including pasture. In the development of forests, the forest area during the first agricultural development period (1973-1985) significantly increased by about 10.82 thousand hectares annually, representing about 1.84% of the annual average of forest area.

The forest area during the second period (1986-2007) decreased by about 5,530 hectares a year, about 0.82% of the annual average. This decrease may be due to excessive drilling of wells in the productive forest areas and conversion of forests for the production of cash crops, as well as the increasing phenomenon of overgrazing which decreases the productivity of the forests.

Table 5.6 Statistical analysis of the equations of general time trend of the areas of agricultural land, pastures and forests during the period (1973-1985) and (1986-2007)

Statement	Equation number	Equation	f value	r ²
Area of seasonal crops	4-5*	$Y = 1724 + 4.29 X$	175.33	0.94
	4-6**	$Y = 1879.2 - 9.53 X$	4.3	0.18
Area of permanent crops	4-7*	$Y = 307.58 + 2.46 X$	553	0.98
	4-8**	$Y = .367.5 - 3.66 X$	21.6	0.51
Area of pastures	4-9*	$Y = 11607.6 + 148.35 X$	213	0.95
	No change in the area			
Area of forests	4-10*	$Y = 510.77 + 10.82 X$	38.9	0.77
	4-11**	$Y = 729.59 - 5.53 X$	29.6	0.59

* (1973-1985)

** (1986-2007)

Calculated from Table 6 and 7 Appendix D

5.1.3.2 Agricultural land holdings

The total area of agricultural holdings in Libya was about 1.8 million hectares in 2006. In 2006, about 64.8% were in private hands and people who had the right to use the land operated about 17.6%. Leased land represented only about 0.16%. The area of land held by farmers has increased between 1974 and 1995 from about 1.6 million hectares to 2.2 million hectares. Irrigated lands amounted about 23% of the total cultivated area in 1995 (El Messallati, 2007).

Table 5.7 Agricultural holdings and the manner of the use in Libya 2006

Manner of the use	Area (1000 H)	%
Private domain	1172.00	64.80
Public domain	57.00	3.15
Occupancy	214.00	11.80
Sharing between the farmer and the owner of the land (Mgarasa)	13.00	0.72
Rent	3.00	0.16
Contract	23.00	1.27
Usufruct	318.00	17.60
Other method of use	9.00	0.50
Total	1809.00	100.00

Sources: El Messallati (2007) and El Shiakhi, (2009)

The pattern of smallholdings in Libya (less than 20 hectares) did not change during the period 1987-2000, and accounted for 85% of total holdings. The regions of El Mareg, El Goba, Al Jabal al Akhder and Sahel El Jafara are areas

where there are concentrations of small-scale farms sized from 5 to 20 hectares (Bedrani, Abidar and Laytimi, 2005). Table 5.7 above shows the distribution of agricultural land holdings.

Farm sizes of less than 5 hectares decreased from about 45.8% in 1987 to about 34.3% in 2000. However, the number of holdings between 5-20 hectares increased from about 41.9% in 1987 to about 56% in 2000. Large holdings (more than 100 hectares) owned by the state did not exceed 1.26% between 1987 and 2000 (FAO, 2006). These findings are important in assessing whether the changes are a factor of policy changes. This will be discussed in detail in Chapter Six.

Table 5.8 below shows farm sizes between 1987 and 2000.

Table 5.8 Farms sizes

Categories land holding, ha	1987		1990		2000	
	No	%	No	%	No	%
Less than 5 ha	57060	45.85	50000	31.45	58300	34.29
5- less than 20 ha	68588	41.90	88000	55.35	95000	55.88
20- less than 100 ha	19380	11.84	19000	11.95	15000	8.82
More than 100 ha	686	0.42	2000	1.26	1700	1.00
Total	163714	100	159000	100	170000	100

Source: AOAD (2006)

5.1.4 Water sources

Water resources are one of the essential elements of economic development, especially agricultural development. Water is a vital resource for food production. The last century, especially during the last two decades, saw a shortage in the quantity of fresh water in many countries due to population growth, and the expansion of agricultural and industrial projects that led to the deterioration of some sources of water as a result of pollution (Al Mahdawi, 2008). Water crisis has led, in some cases, to severe conflicts between neighbouring countries, which compete for the acquisition of these sources or to obtain a greater share of water. The provision of fresh water is an important strategic dimension of development projects in all countries of the world. Libya has suffered from limited resources of water. The intensive use of water in Libya

has resulted in deteriorating water quality and quantity in some areas with high population density and agricultural activities. About 95% of the country is covered by desert. The Mediterranean Sea to the North and the Sahara desert to the south influence the climatic conditions. The Mediterranean coastal strip has dry summers and relatively wet winters, whereas the Jabal Nafusah and Al Jabal Akhdar highlands present a plateau climate with higher rainfall and humidity and low winter temperatures. In the southern inland part, pre-desert and desert climate conditions prevail, with torrid temperatures and large thermal amplitudes. Rains are rare and irregular (Al Mahdawi, 2008). Water resources in all countries of the world can be divided into three sources: rainwater; surface water from rivers and freshwater lakes; and groundwater. Libya does not have any permanent water resources due to its very low and irregular rainfall and the nature of the geological formation. Therefore, the resources of water in Libya can be divided into traditional water resources and non-conventional water resources (Palace, 1978).

5.1.4.1 Traditional water sources (groundwater and surface water)

Traditional water resources represent the main source of water in the Libya and are divided into:

5.1.4.2 Groundwater

Groundwater is stored in aquifers under the ground and it is produced from seepage of rainwater into these rocks. The ground water is renewed if it is fed directly or indirectly because of seepage of rainwater into underground reservoirs, as is found in the northern areas of Libya. Groundwater can be accessed either naturally, as a result of water rising to the surface in the form of spring water, or by digging shallow wells. Groundwater provides more than 95% of the total amount of water currently used for all purposes and activities in Libya and its demand is in line with the rapid growth of all sectors and utilities. Groundwater is located within the five major water basins: El Jabel El Akhader basin; El Kofra and El Sareer basin; El Jafarah basin; El Hamada - El Hamra basin; and the Murzuk basin (GPC, 1999).

5.1.4.3 Surface water

Surface water includes rainwater stored behind dams and natural spring water. This is one of the most important sources of water, especially in the northern areas of Libya. Surface water resources contribute about 5% of the total water resources in Libya. It has been exploited only after the construction of several large dams. Surface water can be divided into, rainwater, water dams and spring water (AOAD, 1994).

5.1.4.4 Rainwater

Rainfall in the northern part of Libya ranges from 100 to 500 mm/year while towards the south rainfall is less, with rainfall in parts of El Kofra, El Sareer and Murzuq almost non-existent. Table 5.9 below shows the rate of rainfall and the proportion of the area coverage in Libya. The size of areas with rainfall of 500 to 600 mm per year does not exceed 0.02%. The area with rainfall from 0 to 5 mm per year is about 45.2% of the total area. This deficit in rainfall has a negative impact on rain fed crops (AOAD, 1990).

Table 5.9 Annual rates of rainfall and the proportion of the covered area in Libya

Annual rates of rainfall	The proportion of the covered area in Libya
600 or more	0.01
500 – 600	0.02
400 – 500	0.07
300 – 400	0.39
200 – 300	0.10
100 – 200	3.31
50 – 100	3.30
20 – 50	21.00
10 – 20	12.20
5 – 10	14.40
0 – 5	45.20

Source: Al Arbah (1996)

5.1.4.5 Water dams and spring waters

Several dams have been constructed on the main valleys in Libya. The main objectives for the construction of these dams were to exploit the reserved water

for agricultural and industrial purposes, and to protect cities, villages and development projects from the risk of flooding. It was also the intention to protect the soil from erosion, and the development of agricultural flats and groundwater re-charge (Shalof and Fares, 2003). The biggest dams were constructed in Zliten where the actual average of annual storage is about 13 million cubic metres. This is 21% of the total water that is obtained from the dams in Libya.

5.1.4.6 Non-Conventional water resources

Non-conventional water resources in Libya include water desalination and wastewater treatment and the great manmade river project.

Water desalination

Desalination is the process of desalinating seawater such that it can be used for drinking purposes and some other economic activities. Desalinated water as non-conventional resources is important water source to many countries especially those that have large shores (El Messallati, 2007). Libya is one of the African countries that desalinate seawater. Its production accounts for 69% of desalination in North Africa (El Shiakhi, 2009). The spread and dependence on this form of water in many countries of the world has relatively reduced as a result of the high cost per cubic metre of production and the exposure of desalination stations to many natural and engineering problems (Al Arbah, 1996). The cost of obtaining per cubic metre of desalinated water in Libya is estimated about 1271 dirham, or about 375 U.S. cents, while the estimated cost of obtaining per cubic metre of water by manmade river project is about 68 dirham, or about 20 U.S. cents. The number of desalination plants in Libya is about 13 stations and its capacity is approximately 76.7million cubic metres/year. The station of Benghazi is the largest, where the production capacity is about 16 million cubic metres/year, representing 23% of the total desalinated water produced in Libya, whilst the station of El Brega is the smallest (GPC, 1999).

Wastewater treatment

Libya gives great attention to treated wastewater used for agricultural projects. Libya has 40 treatment stations located in most major cities. Its total capacity is

about 175 million cubic metres annually. Treated water has been used for the irrigation of agricultural projects such as El Goarsha agricultural project and green plateau project (Sallof and Fares, 2003). Usage of sewage water in irrigation of some crops is limited due to the non-completion of the implementation plans of integrated sanitation in towns and villages and the lack of operating requirements in addition to the severe shortage of trained technical specialists. Thus, the available quantities of treated wastewater for irrigation are relatively small (Mahmoud *et al.*, 2003).

Great Manmade River

The implementation of this project came after many economic feasibility studies. The Libyan government decided transferring underground water from the southern regions to consumption areas in the coastal north. Here, the cost of extracting a cubic metre of groundwater from basins of El Kofra and El Sareer to coastal cities across the line of concrete pipes beneath the surface of the earth does not exceed 100 dirham (\$ 0.35). This compares with 271 dirham (\$3.75) as the cost of desalinating a cubic metre of sea water and 950 dirham (\$ 2.80) cost of transporting a cubic metre of water by marine tanker from neighbouring countries (GPCP,1991).

The first phase started in 1990 and aimed to extract water from underground areas in Tazerbo, El Sareer, El Kofra and North Valley of El Shatee and transport it to the coastal strip to invest in agriculture and provide drinking water to some areas where the population density is high. It transfers about 6 million cubic metres of water per day. This project is one of the largest systems for the transporting water in the world and has been included within the non-conventional water resources despite the fact that it is groundwater (GPC, 1999). Figure 5.2 below shows the distribution grid of the great manmade river.

Due to the prohibitive cost for this project, it has so far not been completed. It was designed to provide appropriate amount of water to strategic agricultural projects as well as a positive step to attract foreign investment in the agricultural sector the Libya (Zidan, 2007).

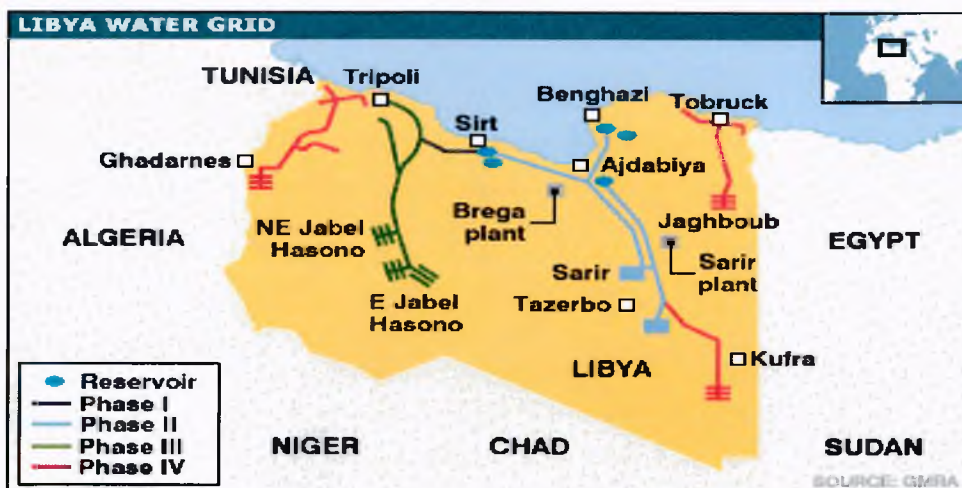


Figure 5.2 Libya water grids

Source: Zidan (2007)

Table 5.10 below shows that the amount of available water for consumption in Libya in 2003 was about 4.9456 billion cubic metres from different sources. The quantity of water consumed is about 4.9375 billion cubic metres, which represents nearly 100% of the total available for consumption. Available data in 2005 shows that the amount of water utilized in household consumption has reached about 396.8 million cubic metres representing about 8%, and the amount utilized in industrial consumption amounted to about 158.7 million cubic metres, representing approximately 3.2% of total amount of water consumed. However, the quantity utilized in the agricultural sector was estimated at 4,382 million cubic metres, accounting for about 88.8% of the total quantities consumed.

Table 5.10 Total water availability and consumption in Libya 2003

Statement	Amount of water (million cubic metres)	Relative importance %
Groundwater	4670.00	94.43
Surface water	170.00	3.44
Water desalination	70.10	1.42
Wastewater treatment	38.50	0.77
Total	4945.60	100
Agricultural consumption	4382.00	88.75
Industrial consumption	158.70	3.21
Household consumption	396.75	8.04
Total	4937.45	100.00

Source GPC (1999)

5.2 The Libyan agricultural trade balance

Agricultural exports represent a small percentage of total Libyan exports because the agricultural sector is not able to meet the growing demand for agricultural commodities due to population growth. Consequently, the agricultural imports represent a large part of total imports in order to cover the needs of agricultural commodities. It can be said that in the agricultural trade balance, Libya has suffered from permanent deficit in agricultural commodities. The next section shows the commodity composition of agricultural exports and imports (AOAD, 2000a).

5.3 Commodity composition of agricultural exports

In view of the limitation of agricultural resources in Libya as mentioned earlier, the surpluses of agricultural exports are very low. However, fish and potatoes are the most important exports commodities because Libya has a comparative advantage in its production Table 5.11 below shows the quantity and value of agricultural exports of the most important agricultural commodities in Libya (AOAD, 2004).

Table 5.11 Quantity and value of agricultural exports of the most important agricultural commodities in Libya 1988-2003 M/\$

commodity	1988-1992		1992-1995		1996		1997		1998-2003	
	QTY	Value	QTY	Value	QTY	Value	QTY	Value	QTY	Value
Fish	0.28	0.69	0.30	1.47	0.46	2.55	0.49	2.9	0.54	3.26
Potato	0.55	0.13	2.41	0.56	3.27	1.64	1.55	0.58	2.6	1.38

Source: AOAD (2004)

5.4 Composition of agricultural imports

Agricultural imports continue to increase due to the population growth. Table 5.12 below shows that imports of grain and flour increased at the beginning of the nineteen-nineties from about 1,892 thousand tonnes to about 2,745 thousand tonnes in 2003 and the value increased from about \$378 million to about \$384 million for the same period, as was the case for sugar and vegetable oils. On the other hand, there were fluctuating quantities of imported Legumes from year to year, and also increasing quantities of imported animal products; live or slaughtered meat, as well as dairy and derivatives products. The increase in the value of agricultural commodities imported may be due to higher prices globally.

Table 5.12 Quantity and value of agricultural imports in Libya 1988-2003 M/\$

Commodity	1988/1992		1992/1995		1996		1997		1998/2003	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Grain and flour	1891.76	327.84	2058.90	364.07	1010.07	293.25	2099.59	607.28	2745.06	883.27
Raw sugar	196.30	66.10	197.65	62.69	148.95	65.11	201.36	87.99	158.56	80.17
Legumes	10.80	7.80	34.92	14.92	74.95	31.93	8.46	3.60	10.98	28.02
Vegetable oils	90.27	106.97	109.21	119.21	97.38	108.36	108.38	134.38	143.99	146.20
Fresh and dried vegetables	42.62	45.50	45.18	46.95	50.99	50.3	34.89	37.59	52.31	52.68
Cow	61.12	51.30	60.78	40.92	190.80	170.96	100.00	170.86	207.25	384.61
Sheep	1460.00	118.4	781.62	66.68	302.39	44.96	299.5	44.5	298.00	32.18
Meet	5.03	11.75	2.13	4.97	3.88	9.12	4.39	16.27	3.02	13.34
Poultry	0.37	0.51	1.96	2.32	0.91	2.09	3.26	4.57	3.70	5.20
Dairy and derivatives products	391.94	102.50	371.65	91.82	307.07	98.91	142.4	75.52	374.4	178.4

Source: AOAD (2004)

5.5 Agricultural imports and exports during the period of 1973-1985

Table 5.13 and Figure 5.3 below show that the average of agricultural imports during the period 1973 to 1985 was about \$223m, while agricultural exports for the same period amounted about \$6.8m. There was a huge deficit in agricultural trade balance during this period. This is clearly evident through the coverage rate of exports to imports, which has been ranging between 0.008 and 0.11 during the period from 1973 to 1985. The coverage rate is obtained by dividing export figures by import figures.

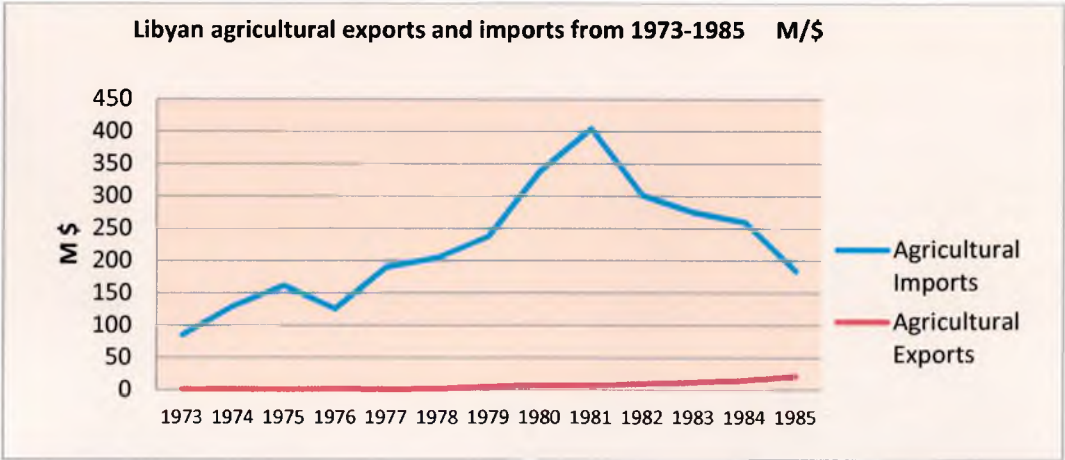


Figure 5.3 Libyan agriculture exports and import from 1973-1985
Source: Table 5.13

Table 5.13 The evolution of agricultural imports and exports during the period of 1973-1985 M.LYD

Year	Imports	Exports	Export/Import Coverage
1973	85.00	1.10	0.013
1974	129.70	1.60	0.012
1975	161.80	1.30	0.008
1976	126.00	2.00	0.016
1977	190.20	1.60	0.008
1978	205.30	2.30	0.01
1979	238.06	5.60	0.02
1980	338.06	7.10	0.02
1981	404.50	7.15	0.02
1982	301.40	9.56	0.03
1983	275.20	12.36	0.05
1984	259.50	15.36	0.06
1985	184.00	21.36	0.12
Average	222.98	6.80	0.03

Source: (AOAD, Yearly book)

5.6 Agricultural imports and exports during the period (1986-2007)

Table 5.14 and Figure 5.4 below show that the average of agricultural imports during the period 1986-2007 was \$1319.14m, while agricultural exports for the same period amounted to about \$28m. Agricultural trade balance suffers from permanent deficit, where agricultural exports cover agricultural imports by only 0.02, despite slight improvements in exports, especially exports of fish where great attention has been given to the fish industry recently. Big fish farms, especially in the north eastern part of Libya (Ras Al Hilal region), owned by Gaddafi's son (Saif Al Eslaam), received significant financing and skilled workers, and were backed by several resolutions such as No. 242 (1999). This was to organize the import and distribution of goods and resolution No. 9 (1999) to organize the licenses of the offices for export and import.

Table 5.14 The evolution of agricultural imports and exports during the period of 1986-2007 M.LYD

Year	Imports	Exports	Export/Import Coverage
1986	525.63	22.31	0.05
1987	514.32	25.00	0.04
1988	687.45	27.95	0.04
1989	887.25	32.15	0.03
1990	977.00	30.56	0.04
1991	975.12	35.65	0.04
1992	980.78	39.12	0.03
1993	1315.80	42.70	0.04
1994	1205.30	48.08	0.04
1995	1132.10	47.40	0.06
1996	1029.30	58.38	0.02
1997	1619.00	35.28	0.02
1998	2296.70	48.75	0.02
1999	1565.30	27.65	0.02
2000	1123.30	21.56	0.02
2001	1002.50	15.32	0.01
2002	1265.30	17.45	0.01
2003	1425.00	12.5	0.01
2004	1685.00	8.50	0.01
2005	1732.30	7.08	0.01
2006	1684.50	7.17	0.002
2007	3392.30	7.17	0.05
Average	1319.14	28.08	0.02

Source: (AOAD, Yearly book)

Despite the development in exports, low export-import ratio indicates that Libya is a net importer of agricultural commodities and relies on imports to provide the needs of the population for agricultural commodities. This supports the claim of decision-makers about an urgent need to consider the development of the agricultural sector generally and agricultural policies specifically to ensure food security. In addition, the deficit in agricultural trade balance is covered by the general budget, which burdens on state budget.

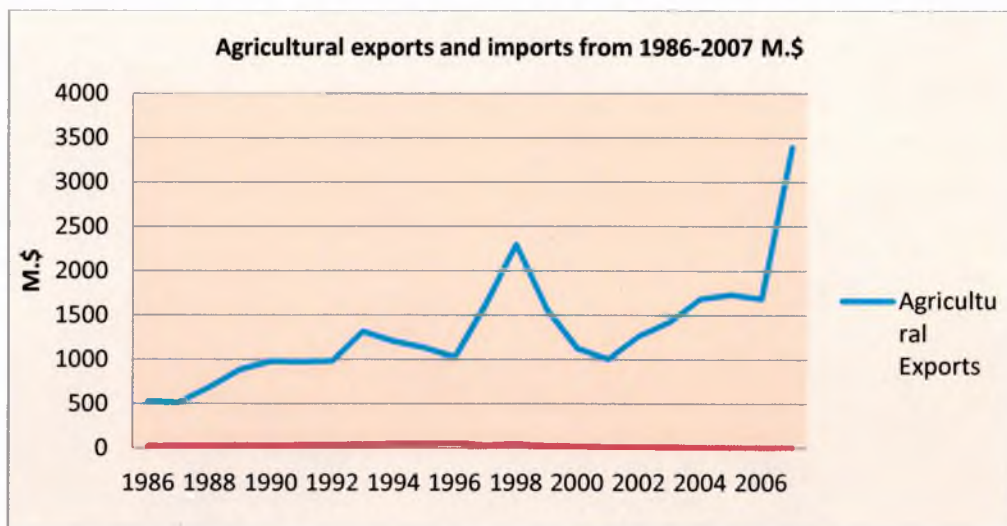


Figure 5.4 Libyan agricultural exports and imports from 1986-2007
Source: Table 5.14

Table 5.15 below shows the general time trend of imports and exports in the two different periods where the annual increase of agricultural imports amounted 15.29 Million in the first period (See Equation 4-12) then increased to about 71.09 Million in the second period (See Equation 4-13). On the other hand, there was a slight decrease in the agricultural exports, which amounted \$1.5m in the first period (See Equation 4-14) while the annual decrease amounted about \$1.29m in the second period (See Equation 4-15).

Table 5. 15 General Time trend of agricultural exports and imports

The period	Statement	Equation number	Equation	r ²
Medium-term plans 1973-1985	Agricultural imports	(4-12)	$Y = 115.8 + 15.29 x$	0.42
	Agricultural exports	(4-13)	$Y = -3.7 + 1.5 x$	0.82
Annual plans 1986-2007	Agricultural imports	(4-14)	$Y = 501.5 + 71.09 x$	0.53
	Agricultural exports	(4-15)	$Y = 42.9 - 1.29 x$	0.30

Calculated from Table 5.13 and 5.14

5.7 Agricultural sector performance and the Libyan GDP

Libya has experienced huge political and economic upheavals since the start of the twentieth century, when it was listed as one of the poorest countries in the world. During this period, when it passed from Ottoman to Italian to UN control, more than 70% of its population were employed in agriculture, a sector that contributed more than 30% to the GDP (El Azzabi, 1974). This was as well as

providing raw materials to the manufacturing sector. Libya finally gained independence in 1951 and in 1958; huge reserves of oil were discovered. The development of the oil industry brought in massive revenues, and completely transformed the shape of the Libyan economy, which became dominated by this one sector. International Monetary Fund reports state that from 2002 to 2007 the oil industry's contribution to the GDP rose from 50% to 71.6%. At the same time, 95% of export earnings and over 75% of government receipts can be attributed to oil revenues.

5.7.1 Overview of the Libyan GDP and oil prices

Libyan GDP depends mainly on the oil sector. In 2007, the sector contributed about 71.6% to GDP, followed by public services sector by only 6%; the agricultural sector, by contrast, contributed about 2% (El Messallati, 2007).

According to the Central Bank of Libya, the Libyan GDP saw a remarkable development during the period 1973-1985. It more than tripled, from 2.1827 billion LYD in 1973 to about 7.8521 billion LYD in 1985, at current prices, achieving a growth rate of 13.8%. While, the GDP at constant prices increased from about 17,290 million LYD in 1973 to about 22,076.2 million LYD in 1985. The average of annual rate reached about 31,727 million LYD, achieving a growth of 6.3%.

The highest value of GDP was in 1980 as a result of high global oil prices in 1980 (Abdulgader (2005). On the other hand, the Libyan GDP, after 1980, due to the drop in oil prices, declined and achieved a negative growth rate, which reached -16.6% at current prices in 1981 (Central Bank of Libya and El Messallati, 2007).

At the beginning of the 1990s there was a relative improvement in crude oil prices. But, unfortunately, Libya came under economic sanction in 1992, which prevented the development of the Libyan economy as desired. However, at the beginning of the second half of 1999, the economic sanctions were lifted (El Messallati, 2007). Accordingly, the national economy took off once again. In addition, the price of crude oil increased which led to a significant improvement in the national economy. Between 1999 and 2000, the price of oil increased by 59% (GPC, 2003) which led to an increase in the value of GDP, at current

prices, of about 6,960.7 million LYD in 1986. This was to about 7,000.5 million LYD in 2007, with a growth rate average of about 12.9%. In addition, at constant prices it increased from about 18.94 billion LYD in 1986 to about 51.28 billion LYD in 2007, with a growth rate average of about 9.1% for the period 1986-2007 (Central Bank of Libya and El Messallati, 2007).

The impact of prices changes on the real GDP and on other economic variables can be avoided by using the index prices (constant prices) against of the current prices (Van Nunspeet and Takema, 1999) and (El Messallati, 2007). In addition, Thompson (2009) states that using constant prices instead of current prices can be the best way to adjust for inflation and present financial data in real terms.

In line with this, Central Bank of Libya employed the prices index for 1997 in computing the GDP from 2000-2009. This is confirmed by the Economic Bulletin issued by the Central Bank of Libya and the prices index for 1997 also is used in the national accounts released by the General Planning Council of Libya (GPC, 2003).

Therefore, the current prices have been converted to constant prices by using the prices index of 1997.

5.7.2 Performance of Libyan agricultural sector

Libya has pursued many agricultural policies through economic development programmes aimed at the economic and social development of all sectors (Abdulgader, 2005).

The determination of the effectiveness and success of agricultural policies in Libya, as well as the effectiveness of investments allocated to the development of the agricultural sector through planning and economic development programmes, can be made by examining agricultural GDP and *per capita* income. This is as well as the estimation function of GDP and the agricultural production function during the period 1973-2007, which is part of this research. Various studies on agricultural economy by Adegeye and Dittoh (1985); Bos (1997) and Awosola *et al.* (2008) used time series to estimate the impact of combined variables that might be significant in interpreting agricultural performance. This section aims to assess agricultural GDP and *per capita* at

both current and constant prices, first in the two periods covered by the research 1973-1985 and 1986-2007 and then the whole study period 1973-2007.

5.7.3 Agricultural GDP at current and constant prices 1973 -1985

Agricultural production and its contribution to gross domestic product (GDP) are the most important indicators for the performance of the agricultural sector in terms of achieving its objectives. This is because agricultural production is a component of Gross National Product. Therefore, the development of the agricultural sector can be inferred through agricultural output or the added value of the sector (Mucavele, 2007 and Godoy & Dewbre, 2010).

The period 1973 -1985 was a turning point for the agricultural sector in Libya. Three plans for agricultural development were implemented (Abdulgader, 2005). These plans sought as a whole to increase the growth rate in the agricultural sector and ensure its increased contribution to GDP. They were also to achieve high rate of self-sufficiency in agriculture and food products as well as establish a level of integration between the agricultural sector and other sectors. Large investments were allocated to achieve these objectives (El Shiakhi, 2009). The value of agricultural GDP has seen remarkable development during the period 1973-1985 (GPCT, 1999).

Table 5.16 and Figure 5.5 show that the value of agricultural GDP increased at current prices from about 60 M.LYD in 1973 to about 342.2 M.LYD in 1985. The average growth rate at current prices was estimated at 17% for that period. However, at constant prices, the value of agricultural GDP increased from 475.3 M.LYD in 1973 to about 962.1 M.LYD in 1985, and the average growth rate was estimated at about 8.2%.

In order to assess the evolution of agricultural GDP at current and constant prices, the equation of general time trend is estimated as follows: Equation (4-16) in Table 5.17 shows that the value of Agricultural GDP at current prices increased annually at 26.93 M.LYD, representing 14.4% of the annual average which was 186 million. There is a compound annual growth rate of 16.3% and the value of R^2 is approximately 0.93. It also proves a significant regression coefficient and a significant form as a whole at the model level at is 95%.

Table 5.16 the evolution of the value of GDP and Ag GDP at current and constant prices during the period of 1973-1985 M. LYD

year	GDP at current prices (A)	GDP at constant prices(B)	Ag GDP at current prices (C)	Ag GDP at constant prices (D)	Growth rate of A	Growth rate of B	Growth rate of C	Growth rate of D
1973	2182.70	17290.00	60.00	475.30	----	----	----	----
1974	3795.70	28702.70	65.00	489.30	73.90	66.01	7.83	2.94
1975	3674.30	25175.50	83.00	568.00	3.10-	12.30-	28.10	16.10
1976	4768.10	30287.00	100.00	633.30	29.80	20.30	20.30	11.49
1977	5612.70	34546.40	90.00	554.00	17.70	14.06	9.70-	12.53
1978	5496.10	24961.80	122.10	554.50	2.10-	27.70-	35.70	0.11
1979	7603.00	39947.60	140.40	737.70	38.30	60.04	15.00	33.03
1980	10553.30	55449.00	236.40	1242.00	38.80	38.80	68.40	68.38
1981	8798.40	45818.20	273.60	1425.00	16.60-	17.40-	15.70	14.71
1982	8932.40	34097.70	285.70	1091.00	1.50	25.60-	4.42	23.40-
1983	8511.30	29375.00	303.00	1046.00	4.70-	13.90-	6.06	4.10-
1984	7804.70	24729.50	323.00	1023.00	8.30-	15.80-	6.60	2.10-
1985	7852.10	22076.20	342.20	962.10	0.60	10.70-	5.94	5.90-
Average	6583.40	31727.40	186.00	830.80	13.81	6.32	17.00	8.21

Sources: Central Bank of Libya and El Messallati (2007).

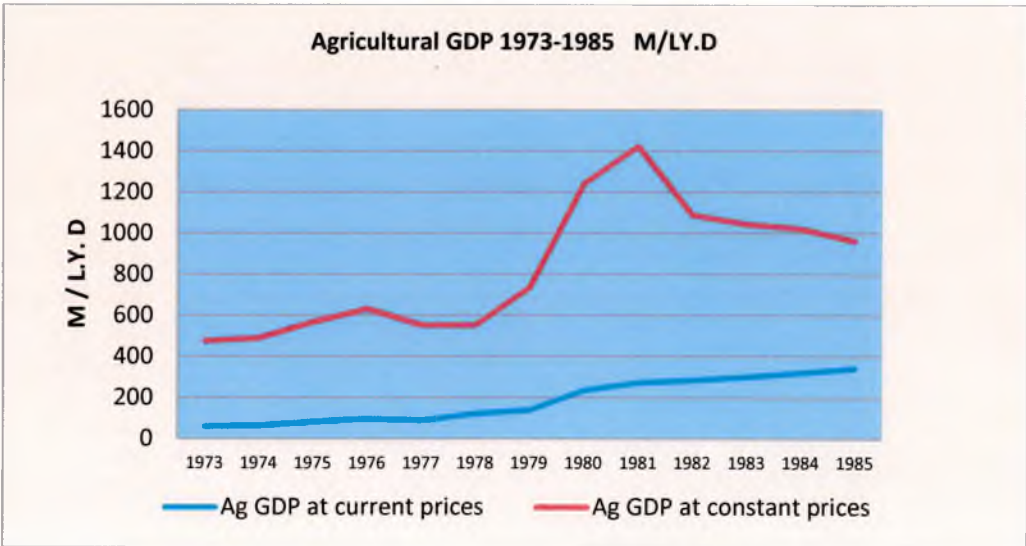


Figure 5.5 Evolution of Libyan Ag GDP 1973-1985
Source: Table 5.16

In Equation (4-17), the value of Agricultural GDP at constant prices increased annually by 62.1 M.LYD, representing 7.48% of the annual average, which was

830.8 million. It shows a compound annual growth rate of 8.07% and the value of R^2 is approximately 0.58. The equations are as follows:

Table 5.17 Results of statistical analysis of the equations of general time trend of Ag GDP at current prices and constant prices during the period 1973-1985

Statement	Period	Equation number	Equation	r^2	f
General time trend equation of Ag GDP at current prices $Y = B_0 + B_1 x$	1973-1985	(4-16)	$Y = -2.038 + 26.93 x$	0.93	163.7
General time trend equation of Ag GDP at constant prices $Y = B_0 + B_1 x$		(4-17)	$Y = 396.1 + 62.10x$	0.58	15.4

Calculated from Table 5.16

5.7.4 Agricultural GDP at current and constant prices during the period 1986-2007

During this period, the approach to economic and social planning had changed from 3-5 year plans to annual plans. This was as a result of a sharp decline in oil prices. Oil is the main sponsor of policies for economic development in Libya. During this period, policies were worked out according to budgets of transformation. Twenty-two transition budgets were formulated and carried out from 1986 to 2007 (GPCT, 1993).

With respect to the evolution of agricultural GDP during 1986 - 2007 as showed in Table 5.18, there has been remarkable development as shown in Figure 5.6 below. The value of agricultural GDP at current prices increased from about 384.7 M.LYD in 1986 to about 1434 M.LYD in 2007 and the average growth rate was estimated at about 7.4%. At constant prices, the value of agricultural GDP increased from about 1047.1 M.LYD in 1973 to about 1374 M.LYD in 2007 and the average growth rate was estimated at 2.1% for the period 1986-2007.

Table 5.18 the evolution of the value of GDP and Ag GDP at current and constant prices during the period of 1986-2007 M.LYD

year	GDP at current prices (A)	GDP at constant prices (B)	Ag GDP at current prices (C)	Ag GDP at constant prices (D)	Growth rate of A	Growth rate of B	Growth rate of C	Growth rate of D
1986	6960.70	18946.50	384.70	1047.10	11.35-	14.20-	12.40	8.80
1987	6011.60	15680.10	411.20	1073.00	13.64-	17.20-	6.89	2.40
1988	6186.00	15209.20	423.30	1041.00	2.90	3.00-	2.94	2.90-
1989	7191.00	17416.90	439.00	1065.00	16.20	14.50	3.90	2.40
1990	8246.40	18416.60	482.90	1078.00	14.70	5.70	9.80	1.20
1991	8757.30	17478.30	542.40	1083.00	6.20	5.10-	12.30	0.38
1992	9231.90	16848.60	630.20	1150.00	5.40	3.60-	16.20	6.20
1993	9137.70	15014.10	708.90	1165.00	1.00-	10.90-	12.50	1.30
1994	9670.80	13850.00	827.90	1186.00	5.80	7.80-	16.80	1.80
1995	10672.20	13773.10	933.40	1205.00	10.40	0.56-	12.70	1.60
1996	12327.30	14054.70	1074.50	1225.00	15.50	2.00	15.10	1.70
1997	13800.50	13800.50	1267.00	1267.00	12.00	1.80-	17.90	3.40
1998	12610.60	11266.70	1394.30	1246.00	8.60-	18.40-	10.00	1.70-
1999	14075.20	11070.20	1449.70	1140.00	11.60	1.70-	3.99	8.40-
2000	18456.90	14950.30	1439.70	1166.00	31.20	35.10	0.70-	2.20
2001	18720.20	16637.20	1392.00	1237.00	1.40	11.30	3.30-	6.10
2002	25914.10	25541.30	1348.00	1329.00	38.40	53.50	3.10-	7.50
2003	31731.80	31954.30	1375.00	1384.60	22.50	25.10	1.90	4.20
2004	30892.00	44096.76	1107.00	1325.65	-2.60	37.90	-19.40	-4.20
2005	41632.00	46893.88	1186.00	1341.87	34.70	6.30	7.10	1.20
2006	55227.00	49091.00	1254.00	1358.09	32.60	4.60	5.70	1.20
2007	70005.00	51288.12	1434.00	1374.00	26.70	4.40	14.30	1.10
Total	19429.90	22421.70	977.50	1203.90	12.90	9.10	7.40	2.10
Average	13006.60	27074.50	581.70	1017.30	13.30	7.70	12.20	5.10

Sources: Central Bank of Libya and El Messallati (2007).

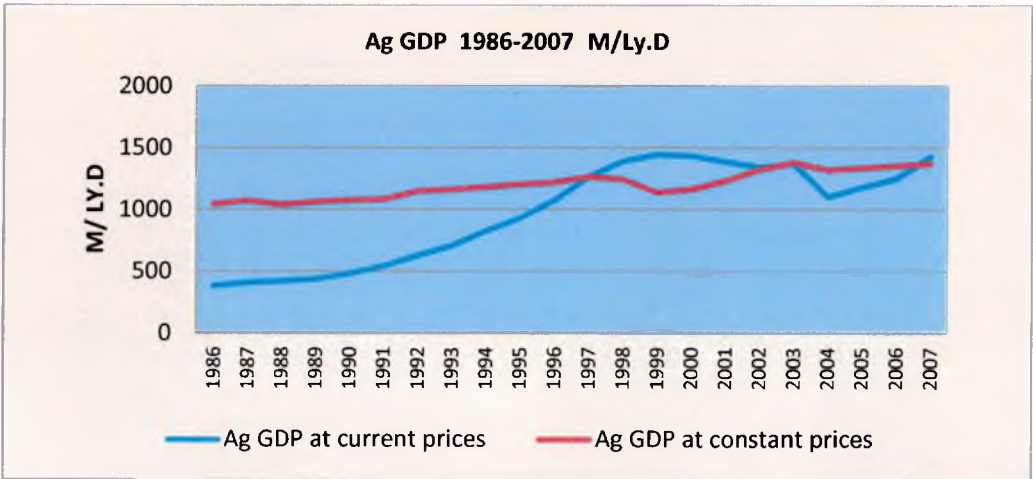


Figure 5.6 Evolution of Libyan Agricultural GDP 1986-2007

Source: Table 5.18

To assess the evolution of agricultural GDP at current and constant prices, the equation of general time trend is estimated as follows: Equation (4-18) in Table 5.19 below shows that the value of Agricultural GDP at current prices increased annually by 55.42 M.LYD, representing 2.6% of the annual average which was 977.5 million. It shows a compound annual growth rate of 6% and also estimates the value of R^2 at approximately 0.76. It also proves a significant regression coefficient and a significant form as a whole at the model level is at 95%.

In Equation (4-19), the value of Agricultural GDP at constant prices increased annually by 16.21 M.LYD, represented by 1.3% of the annual average, which was 1203.9 M.LYD. There is a compound annual growth rate of 1% and the value of R^2 are estimated at 0.86. It also proves a significant regression coefficient.

Table 5.19 Statistical analysis of the equations of general time trend of Ag GDP at current prices and constant prices during the period 1986-2007

Statement	Period	Equation number	Equation	r^2	f
General time trend equation of Ag GDP at current prices $Y = B_0 + B_1 x$	1986-2007	4-18)	$Y = 340.1 + 55.42x$	0.79	75.9
General time trend equation of Ag GDP at constant prices $Y = B_0 + B_1 x$		(4-19)	$Y = 1017 + 16.21x$	0.86	124.15

Calculated from Table5.18

5.7.5 Evolution of average of per capita of agricultural GDP at current and constant prices during the period 1973-1985

This indicator is considered as one of the important indicators used in economic and statistical studies because it reflects general economic well-being (Akram-Ladhi, 2008 and Godoy & Dewbre, 2010).

Table 5.20 and Figure 5.7 below indicate that the average of *per capita* of Agricultural GDP at current prices has increased from about 26.7 Dinars in 1973 to about 94.6 Dinars in 1986 with a total increase of about 67.9 Dinars. On the other hand at constant prices, there has been an increase from approximately 11.9 Dinars in 1973 to about 26.1 Dinars in 1985, with a total increase of about

14.2 Dinars. Thus *per capita* of Agricultural GDP remains unchanged where the improvements and increases are modest during that period.

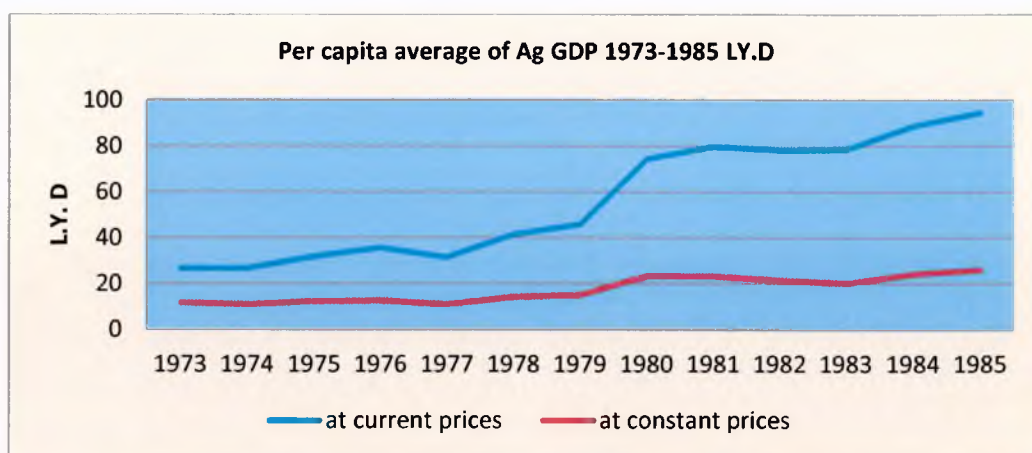


Figure 5.7 Average of per capita of Ag GDP (1973-1985)
Source: Table 5.20

Table 5.20 Evolution of the average of per capita of GDP and Ag GDP at current and constant prices during the period of 1973-1985

Year	Population	The average of per capita of GDP		The average of per capita of Ag GDP		Growth rate of A	Growth rate of B	Growth rate of C	Growth rate of D
		Current prices A	Constant prices B	Current prices C	Constant prices D				
1973	2249.30	970.40	7686.80	26.70	11.90	-	-	0	0
1974	2422.10	1567.00	11850.00	26.70	11.00	61.50	54.20	0.00	7.60-
1975	2595.50	1415.60	9699.70	31.90	12.30	9.70-	18.10-	19.50	11.80
1976	2795.50	1705.60	10834.00	35.70	12.80	20.50	11.70	11.90	4.10
1977	2860.10	1962.00	12079.00	31.50	11.00	15.00	11.50	11.80-	14.10-
1978	2939.10	1870.00	8493.00	41.50	14.10	4.70-	29.70-	31.70	28.20
1979	3056.80	2487.00	13068.00	45.90	15.00	33.00	53.90	10.60	6.40
1980	3180.80	3318.00	17432.00	74.30	23.40	33.40	33.40	61.90	56.00
1981	3435.00	2562.00	13339.00	79.70	23.20	22.80-	23.50-	7.30	0.90-
1982	3655.20	2444.00	9328.50	78.20	21.40	4.60-	30.10-	1.90-	7.80-
1983	3860.50	2205.00	7609.10	78.50	20.30	9.80-	18.40-	0.40	5.10-
1984	3642.60	2143.00	6789.00	88.70	24.30	2.80-	10.80-	13.00	19.70
1985	3617.80	2170.00	6102.10	94.60	26.10	1.30	10.10-	6.70	7.40
Average	3100.79	2063.05	10331.55	56.45	17.45	9.20	1.80	11.50	7.60

Sources: Central Bank of Libya and El Messallati (2007)

To assess the evolution of the average of *per capita* of Agricultural GDP at current and constant prices, the equation of general time trend is applied as in Table 5.21 below.

Equation (4-20) shows that the average *per capita* of Ag GDP at current prices increased annually by 6.37 Dinars represented by 11.2% of the annual average, which was 56.4 Dinars. It shows a compound annual growth rate of 12% and estimates the value of R^2 at approximately 0.91. It also proves a significant regression coefficient and significant form as a whole at the model level is at 95%. Equation (4-21) shows that the average of *per capita* of Ag GDP at constant prices increased by 1.33 Dinars represented by 7.6% of the annual average, and a compound annual growth rate of 7.8%. The value of r^2 is approximately 0.82. It also proves a significant regression coefficient and significant form as a whole at the model level is at 95%.

Table 5.21 Statistical analyses of the equations of general time trend of per capita of Ag GDP at current prices and constant prices during the period 1973-1985

Statement	Period	Equation number	Equation	r^2	f
General time trend equation of <i>per capita</i> of Ag GDP at current prices $Y = B_0 + B_1 x$	1973-1985	(4-20)	$Y = 11.82 + 6.37x$	0.91	120.6
General time trend equation of <i>per capita</i> of Ag GDP at constant prices $Y = B_0 + B_1 x$		(4-21)	$Y = 8.09 + 1.33x$	0.82	52.3

Calculated from Table 5.20

5.7.6 Evolution of average of per capita of agricultural GDP at current and constant prices during the period 1986-2007

Table 5.22 and Figure 5.8 shows that at current prices the average of *per capita* of Agricultural GDP increased from about 105.1Dinars in 1986 to about 248.2 Dinars in 2007 while at constant prices, the average *per capita* Ag GDP increased from about 28.7Dinars in 1986 to about 55.27 Dinars in 2007.

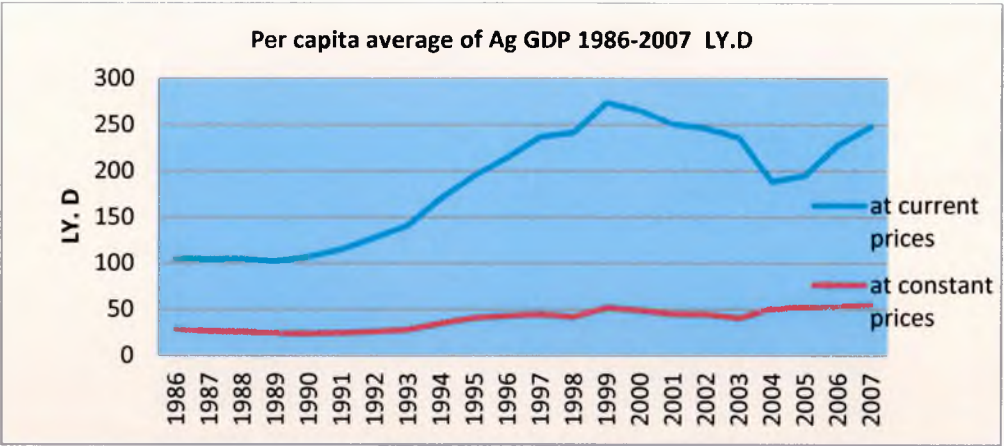


Figure 5.8 Evolution of average of per capita of Ag GDP (1986-2007)
Source: Table 5.20

Table 5.22 the evolution of the average of per capita of GDP and Ag GDP at current and constant prices during the period of 1986-2007 LY.D

Year	Population	The average of per capita of GDP		The average of per capita of Ag GDP		Growth rate of A	Growth rate of B	Growth rate of C	Growth rate of D
		Current prices A	Constant prices B	Current prices C	Constant prices D				
1986	3662.00	1901.00	5173.80	105.10	28.70	12.40-	15.20-	11.10	10.0
1987	3937.00	1526.00	3982.80	104.40	26.50	19.70-	23.00-	0.70-	7.7-
1988	4050.00	1527.00	3755.40	104.50	25.80	0.10	5.70-	0.10	2.6-
1989	4315.50	1666.00	4035.90	101.90	23.60	9.10	7.50	2.50-	8.5-
1990	4525.00	1822.00	4070.00	106.70	23.60	9.40	0.80	4.70	0.0
1991	4726.00	1853.00	3698.30	114.80	24.30	1.70	9.10-	7.60	3.0
1992	4949.00	1865.00	3404.40	127.30	25.70	0.60	7.90-	10.90	5.8
1993	5042.50	1812.00	2977.50	140.60	27.90	2.80-	12.50-	10.40	8.6
1994	4873.50	1984.00	2841.90	169.90	34.90	9.50	4.60-	20.80	25.1
1995	4799.00	2224.00	2870.00	194.50	40.50	12.10	1.00	14.50	16.0
1996	5019.50	2456.00	2800.00	214.20	42.70	10.40	2.40-	10.10	5.4
1997	5347.20	2581.00	2580.90	236.90	44.30	5.10	7.80-	10.60	3.7
1998	5774.20	2184.00	1951.20	241.40	41.80	15.40-	24.40-	1.90	5.6-
1999	5300.50	2655.00	2088.50	273.60	51.60	21.60	7.00	13.30	23.4
2000	5426.80	3401.00	2754.90	265.30	48.90	28.10	31.90	3.00-	5.2-
2001	5551.00	3267.00	2997.20	250.80	45.20	3.90-	8.80	5.50-	7.6-
2002	5484.40	4359.00	4657.10	246.00	44.80	33.40	55.40	1.90-	0.9-
2003	5826.60	5136.00	5484.20	236.00	40.50	17.80	17.80	4.10-	9.6-
2004	5872.90	5275.42	3027.40	188.49	50.56	2.70	-44.80	24.84	-20.1
2005	6077.33	6850.38	2982.80	195.15	52.13	36.70	-1.47	3.11	3.53
2006	5637.03	9367.65	2938.10	228.10	53.70	26.80	-1.50	3.01	16.88
2007	5776.85	12118.20	2893.50	248.20	55.27	29.30	-1.52	2.92	8.81
Average	5089.72	3537.76	3362.08	186.08	38.77	7.80	2.50	5.90	5.00

Sources: Central Bank of Libya and El Messallati, 2007).

To assess the evolution of the average of *per capita* of Ag GDP at current prices and constant, the equation of general time trend has been applied as shown in Table 5.23 below.

Equation (4-22) in Table 5.23 shows that the average of *per capita* of Agricultural GDP at current prices increased annually by 7.98 Dinars represented by 4.2% of the annual average, which was 186.08, Dinars and a compound annual growth rate of 5%. In addition, the value of R^2 is approximately 0.68. It also proves a significant regression coefficient and significant form as a whole at the model level is at 95%.

Table 5.23 Statistical analysis of the equations of general time trend of per capita of Agricultural GDP at current prices and constant prices during the period 1986-2007

Statement	Period	Equation number	Equation	r^2	f
General time trend equation of <i>per capita</i> of Ag GDP at current prices $Y = B_0 + B_1 x$	1986-2007	(4-22)	$Y = 95.266 + 7.98 x$	0.68	43.5
General time trend equation of <i>per capita</i> of Ag GDP at constant prices $Y = B_0 + B_1 x$		(4-23)	$Y = 20.69 + 1.57x$	0.83	102.8

Calculated from Table5.22

Equation (4-23) shows that the average of *per capita* of Agricultural GDP at constant prices increased by 1.57 Dinars, represented by 4% of the annual average which was 38.77 Dinars and a compound annual growth rate of 4%. In addition, the value of r^2 is approximately 0.83. It also proves a significant regression coefficient at 0.95.

5.7.7 Impact of Agricultural GDP on gross domestic product during the period 1973-1985

According to Abdulgader (2005), the adopted classification of economic activities in Libya is not different from the classification adopted by the United Nations. This classification is divided based on activities by ten basic sectors: agriculture, forests and fishing; manufacturing and industry; electricity, gas and

water; construction; trade, restaurants and hotels; storage and transportation; finance, insurance, real estate; housing) and public services.

This section aims to conduct an econometric study to determine the impact of Agricultural GDP on gross domestic product, and assess the function of agricultural GDP due to the fact that the agricultural sector is the basic sector of the Libyan national economy (Salim and Thamer, 2001).

The equation of Gross Domestic Product is estimated by the Ordinary Least Square (OLS) method during the period (1973-1985) at constant prices by using GDP as the dependent variable and the agricultural GDP as an independent variable. According to Hutcheson and Moutinho (2008) using ordinary least squares (OLS) or linear least squares are a method for estimating the unknown parameters in a linear regression model. Logarithmic equations (4-24 and 4-25) in Table 5.24 reflect the contribution of the agricultural sector to GDP.

Table 5.24 Estimating GDP equation during the period of 1973-1985

Statement	Period	Equation number	Equation	r ²	f
Estimating GDP equation during the period of (1973/1985) by using Ag GDP as independent variable	1973-1985	(4-24)	$Ln GDP = 7.32 + 0.465 ln y$	0.32	5.14
		(4-25)	$GDP = 1510.2 y^{0.465}$ (Model of growth equation)		

Calculated from Table5.16

Equation (4-24) in Table 5.24 shows that the significance of estimated parameters and significance of the model is at 95%. Also, R² is approximately 32%. In addition, there is a positive correlation between the value of GDP and the value of agricultural GDP.

The equation (4-25) shows the relationship between GDP and agricultural GDP, where the GDP equation is characterized by decreasing returns to scale. In addition, in Equation (4-23), the coefficient of elasticity represents the relative impact on the dependent variable (GDP) due to the change (1%) in the independent variable (Y). This means the elasticity is less than one, which indicates a low contribution of the agricultural sector to GDP during the period

5.7.8 GDP and agricultural production function during the period 1986-2007

Equation (4-26) in Table 5.25 indicates that there is positive relationship between GDP and Agricultural GDP and the value of r^2 is 0.76.

Table 5.25 Estimating GDP equation during the period of 1986-2007

Statement	Period	Equating number	Equation	r^2	f
Estimating GDP Equation During The Period Of (1986-2007) By Using Ag GDP As Independent Variable	1986-2007	(4-26)	$GDP = 725553.17 - 1148.55 y + 0.378 y^2 + 0.0007 y^3$	0.76	19.1

Calculated from Table 5.18

In addition, the elasticity (E) can be identified through the marginal product (MP) and the average product (AP) and this explains the relative impact of the independent variable on the dependent variable. The elasticity is represented as follows:

$$E = \frac{MP}{AP} = 0.07$$

The (E) value is characterized by low elasticity (less than 1). The contribution of agricultural sector to GDP decreased during the period 1986-2007 when the Libyan economy had adopted annual plans as compared to the first period of medium term plans. See Appendix D equation 8.

5.7.9 Estimating Cobb Douglas Function during the period of 1973-1985

Agricultural GDP function was estimated during the period 1973-1985 by using the method of least squares (OLS), where it uses Ag GDP (Y) M.LYD at constant prices as a dependent variable and capital formation in the agricultural sector in M.LYD (K) and the Labour in the agriculture sector (L) per thousand workers as independent variables. The analysis shows the following results:

Equation (4-27) in Table 5.26 below is significant at 95%. Also, R^2 is approximately 0.82. The value of productivity elasticity, estimated about 0.22, indicates that the Libyan agriculture was characterized by decreasing returns to scale during the period of 1986-2007. Employment is the most important factor affecting the Ag GDP.

Table 5.26 Estimating Cobb Douglass Function during the period of 1973-1985

Statement	Period	Equation number	Equation	r^2	f
Estimating Cobb Douglas Function (Linear form)	1973-1985	(4-27)	$\ln Y = -11.85 + 3.12 \ln L + 0.376 \ln K$	0.82	23.04
Estimating Cobb Douglas Function (Cobb Douglas form)		(4-28)	$AgGDP = 140084 .35 L^{3.12} K^{0.376}$		

Calculated from Table5.16

The Equation (4-28) indicates that the productivity elasticity of these two variables amounted to about 3.12 and 0.376 respectively. This indicates that the Libyan agriculture was characterized by increasing returns to scale during the period of 1973-1985. Employment is the most important factor affecting the Agricultural GDP. Thus, it can be said that Agricultural GDP function in Libya during the period of economic and social planning is based on the labour factor and less dependent on capital.

5.7.10 Estimating Cobb Douglas Function during the period of 1986-2007

Equation (4-29) in Table 5.27 below shows the significance of estimated parameters and significance of the model is at 95%. Also, r^2 is approximately 0.82. Equation 4-30 indicates that the productivity elasticity of these two variables are about 0.15 and 0.071 respectively, which means a change of 1% in these two factors leads to a change in the same direction at about 0.15 or 0.071 in the value of Agricultural GDP.

Table 5.27 Estimating the Cobb Douglas Function during the period of 1986-2007

Statement	Period	Equation No	Equation	r^2	f
Estimating Cobb Douglas Function (Linear form)	1986-2007	(4-29)	$\ln Y = 7.47 - 0.15 \ln L + 0.071 \ln K$	0.82	23.04
Estimating Cobb Douglas Function (Cobb Douglasform)		(4-30)	$AgGDP = 7.47 L^{0.15} K^{0.071}$		

Calculated from Table 5.18

It can thus be said that Agricultural GDP function in Libya during the period of annual economic and social planning is based on the labour factor more than on the capital. In addition, the negative sign of Labour in the equation means the production function is located in the third stage, which is characterized by negative value of marginal products.

5.8 Chapter summary

From the foregoing, agricultural resources have witnessed a decline during the last years of the study period because of labour migration and the declined global oil prices dramatically affected oil revenues. Any drop in oil revenues reflected in the allocations for agricultural development and all aspects of funding for the agricultural sector. The period of 1973-1985 was a turning point for the agricultural sector. Three plans for agricultural development were implemented and these aimed at some essential goals that were seeking as a whole to increase the growth rate in the agricultural sector and to ensure its contribution to GDP. It also sought to achieve a high rate of self-sufficiency in agriculture and food products and work to find some kind of integration between the agricultural sector and other sectors. Large investments had been allocated to achieve these objectives.

On the other hand, during the period of 1981-1985, the previous approach of economic and social planning ceased as a result of the sharp decline in oil prices - which is the main sponsor of economic development plans and after that began working according to the budgets of transformation. Twenty-two transition budgets were formulated and carried out during the period from 1986 to 2007. However, *per capita* of agricultural GDP did not see significant development during the two periods. It was noted that Libya is a net importer of agricultural commodities and its trade balance was in deficit throughout both periods of the study. Despite the government's effort to develop food exports, results show that the percentage of coverage of the agricultural exports to imports is very low and close to zero in spite of the huge investments by government and the agricultural resources available to the country.

In the next chapter, the views of farmers and policy makers collected through questionnaires are analysed and presented. This will give the researcher a fair

view of how policies have influenced the growth of the agricultural sector and its effects on the key stakeholders.

CHAPTER SIX: ANALYSIS OF AGRICULTURAL POLICIES BY FARMERS AND POLICY MAKERS

6.0 Introduction

To achieve the research aim of studying the changes and development that has taken place in both macro policies and agricultural policies in Libya from 1973 until 2007 and to critically assess the agricultural policies of Libya for the same period, as stated in Chapter One, a critical review of Libyan agricultural policies was undertaken in the previous Chapter. This review shows that the agricultural sector in Libya faced difficult challenges following the discovery of oil in the nineteen-fifties as a result of the movement of agricultural labour to work in the oil sector and other sectors with higher incomes. The government intervened with plans and programmes to reverse the trend, which resulted in increase in agricultural sectors' contribution to GDP from 2.2 % in 1973 to about 4.5 % in 1985. The policy interventions led to increases in agricultural production. However, these interventions did not last long. The fall in global oil prices in 1982 made the financing of the policy implementation difficult.

In the previous Chapter, an analysis of the impact of two approaches of agricultural policies on the performance of the agricultural sector in Libya was explored. This examined the impact of some variables such as agricultural GDP, *per capita* of agricultural GDP that relate to the performance of the agricultural sector to determine the returns to scale of agricultural production function. It was found that *per capita* of agricultural GDP did not improve significantly during the periods in which two different policy approaches were used to develop the agricultural sector. Libya remains a net importer of agricultural commodities despite the government's effort.

To get a better understanding of the above issues, this Chapter presents the findings of the impact of agricultural policies on the Libyan agricultural sector during the two approaches covered by this study from the perspective of decision-makers and farmers. These are the two key stakeholder groups affected by changes in agricultural policies. Whilst the policy makers formulate and implement policies the farmers are the ones who are directly affected by these policies. Therefore, the views of these two key stakeholder groups will help us to understand the impact of agricultural policies in Libya. The Chapter is

structured as follows: Section 6.1 is on the assessment of agricultural policies by decision-makers. Sections 6.2 and 6.3 present the finding of assessment of agriculture policies by small farmers.

6.1 Assessment of agricultural Policies - perspectives of decision-makers

The Ministry of Agriculture is responsible for making agricultural decisions. There is a committee in charge of this. The committee is made of twenty members. The chair of this committee is the Minister of Agricultural sector and membership of a number of consultants (El Shiakhi (2009). To get a comprehensive assessment for agricultural policies, census survey has been adopted in this study where all members of the committee have participated

6.1.1 Characteristics of decision makers

A descriptive analysis of the demographic data of twenty policymakers in the Agriculture Ministry of Libya shows that the respondents were within the 31–50 year age group and had more than 10 years' experience in the field of agriculture. Forty percent of them hold a PhD in the field of agriculture, whilst more than half (55%) have a BSc degree in Agricultural Science. Table 6.1 below shows the positions of the respondents.

Table 6.24 Positions of respondents

Position	Role	Number of respondents
The Minister of Agriculture	Chairman of committee of decision-making	1
Heads of Departments in the Ministry of Agriculture	Members of committee of decision-making	10
The Manager of Agricultural Bank	Member of committee of decision-making	1
The Director of Agricultural Research Centre	Member of committee of decision-making	1
Consultants in Agricultural Research Centre	Members of committee of decision-making	7
Total		20

6.1.2 The role of agriculture in economic development of Libya

In Figure 6.1 below, thirty percent of respondents expressed the view that agriculture in Libya plays a very important role, whilst 25% of respondents indicated that it plays an important role. The importance of the sector stems

from the fact that it employs a large number of workers and provides essential food commodities, food security and self-sufficiency to the population. Whereas 45% of the respondents pointed out the low role of the agricultural sector in terms of the economic development of Libya, such views come as a result of the effects of the oil sector and its vital role in relation to economic development and the decrease of the contribution of agriculture to GDP in recent years.

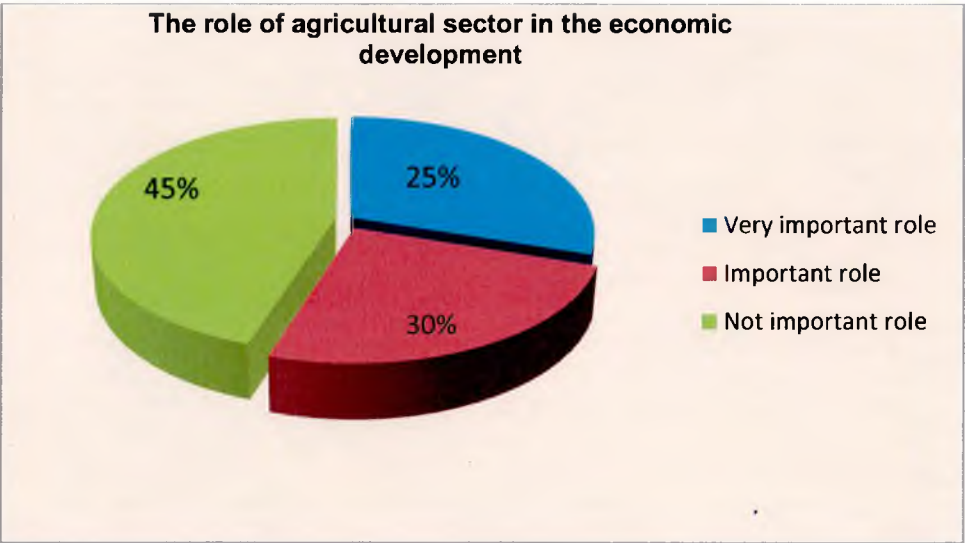


Figure 6.1 The role of agriculture in economic development

6.1.3 Agricultural policies during the last three decades

There are differences in views about the effectiveness of agricultural policies in Libya during the last three decades as shown in Figure 6.2 below. The agricultural policies, which have been applied in Libya, are to some extent appropriate for the agricultural sector. This is the view of 10% of respondents; 20% suggested that the policies were appropriate due to the increase in cultivated areas and agricultural production, especially in the nineteen-seventies and nineteen-eighties. However, 70% of respondents pointed out that the policies did not support the agricultural sector due to its low contribution to GDP and the deficit of agricultural trade balance as well as the increasing reliance on imports of agricultural commodities.

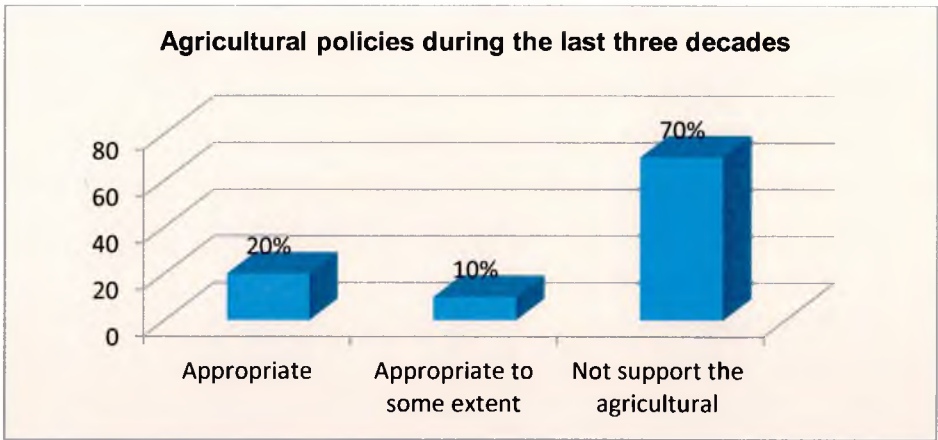


Figure 6.2 Agricultural policies during the last three decades

6.1.4 Current agricultural policies

Many of those interviewed (65%), as shown in Figure 6.3 below, indicated that the current agricultural policies in Libya are not adequate for the sector. They added that the policies are not clear and long-term goals are unknown. Twenty percent of respondents are of the view that the policies are adequate only to some extent, with only 15% agreeing that the policies are sufficient and suitable but might need modifications according to the changing economic and political conditions.

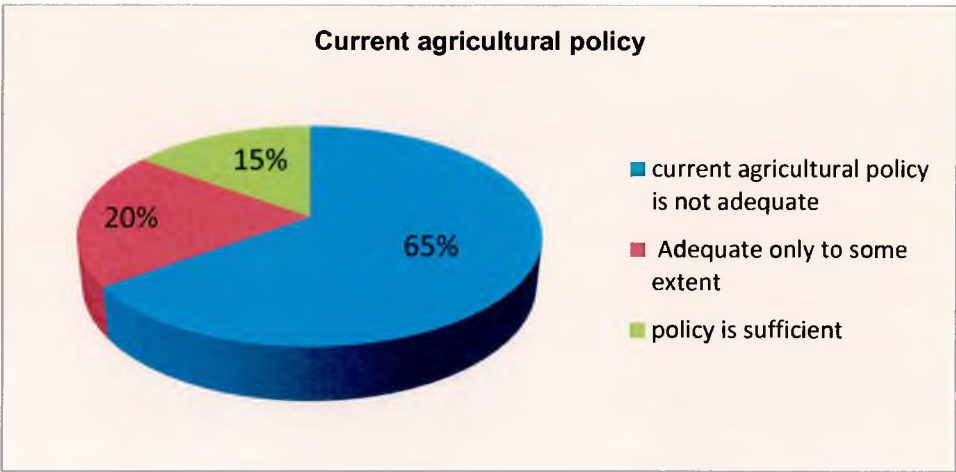


Figure 6.3 Current agricultural policy

6.1.5 Constraints on the agricultural sector

All the participants agreed that natural constraints (e.g. climate, soil, water, etc.) are the most important obstacles facing the development of the agricultural sector in Libya. Seventy percent of the respondents pointed out other constraints such as the weaknesses of agricultural policies and insufficient

funding as well as the lack of appropriate markets, poor roads and storage infrastructure.

6.1.6 Priority of agricultural policies

The findings suggest that specific policies such as improving marketing conditions, the provision of loans, seeds and fertilisers and the provision of appropriate facilities for imports and exports for small farmers could be critical to overcome existing obstacles. Focusing on some crops because of global economic competition and the opening up of the markets for comparative advantage is of major importance when seeking to establish the extent and potential of competition for agricultural commodities. This is also important when seeking to identify the priorities for resource allocation amongst competing crops. In this regard, majority of policymakers’ (85%) see the importance of focusing on specific crops, which Libya has a comparative advantage in producing compared with neighbouring countries. See Figure 6.4 below)

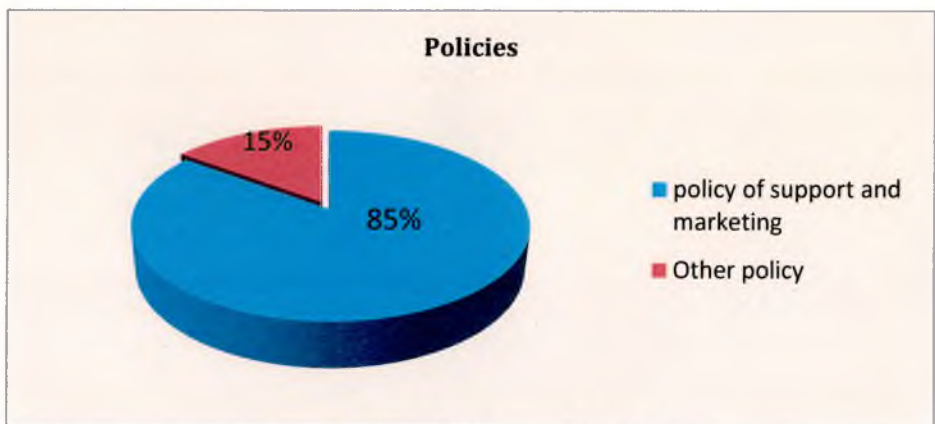


Figure 6.4 Policies

6.1.7 Funding policy

Undoubtedly, sufficient funding is an important factor for achieving policy success. The granting of loans for production inputs (fertiliser and seeds) or the provision of modern agricultural technology, or funding related to infrastructure development of the agricultural sector (El Shiakhi, 2009). Nevertheless, there has also been some recognition amongst 60% of policymakers that low funding is the dominant barrier for the Libyan agricultural sector. Twenty-five percent of respondents stated that funding is adequate to some extent. On the other hand,

only 15% believe that the funding is appropriate for meeting the needs of the sector.

6.1.8 Weakness of agricultural policies

A large proportion of participants (65%) indicated that agricultural policies have so far not been suitable for the agricultural sector and 70% indicated that policies does not meet the needs of farmers. Sixty percent of respondents stated that funding is not sufficient for the implementation of agricultural policies. Also 70% of respondents noted that monitoring and supervision of policies were weak. Fifty percent of respondents were of the view that role of the private sector is important in the development of the agricultural sector. Other respondents believe that the economic and political climate in Libya is not conducive for efficient operations the private sector. See Table 6.2 below for details on weaknesses in agricultural policy.

Table 6.32 Weakness of agricultural policies

Statement		Agree	To some extent	Disagree
1	Agricultural policies are not suitable for our country.	65%	20%	15%
2	These policies are not meeting the real needs of the farmers.	70%	-	30%
3	Funding is not sufficient for the implementation of agricultural policies	60%	25%	15%
4	Official bodies are incapable.	70%	15%	15%
5	The role of the private sector is important in the development of the agricultural sector	50%	30%	20%
6	Reduce intervention of government in economic activity	40%	20%	40%

6.1.9 Reasons for the failure of agricultural policies

With regard to the reasons for the failure of agricultural policies, Figure 6.5 below shows that 40% of the respondents indicated that the farmers have not benefited from agricultural policies because they have not participated in the process of decision-making. Another 40% of the respondents gave the reason as the agricultural sector not being accorded the needed importance compared to other sectors in terms of funding. Twenty percent of respondents pointed out that other reasons such as weakness of agricultural extension services contribute to the failure of agricultural policies. See Figure 5.5 for reasons for failure of agricultural policies.

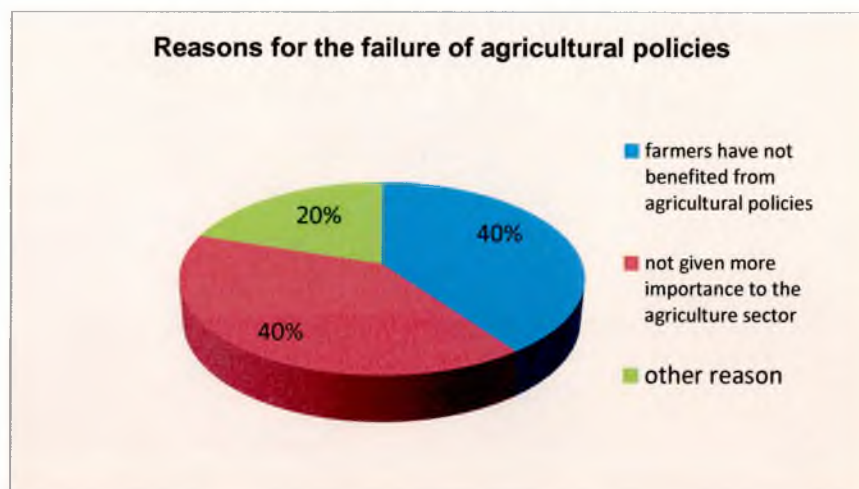


Figure 6.5 Reasons for failure of agricultural policies

6.1.10 Intervention of the state in agricultural activities

With regards to the intervention of the state in overseeing the marketing of products and their impacts on agricultural commodity prices, and the availability of the real market based on supply and demand, findings indicate 45% of decision makers stress the need for state intervention in agricultural marketing. This is owing to the lack of appropriate conditions for a real market for agricultural commodities in Libya and the lack of marketing information. In addition, there are no mechanisms for prices which make the intervention of state is very important. However, some of the policymakers (30%) suggest that this intervention should be limited only to the marketing of strategic goods, such as wheat, barley, olives and dates which Libya has a comparative advantages in its production.

In contrast, some policymakers emphasize the need to leave the market to the forces of supply and demand without any degree of state intervention. It is considered that this would lead to an increase in production and productivity owing to the existence of real competition in the market. See Figure 6.6 below on interventions of the State in agriculture.

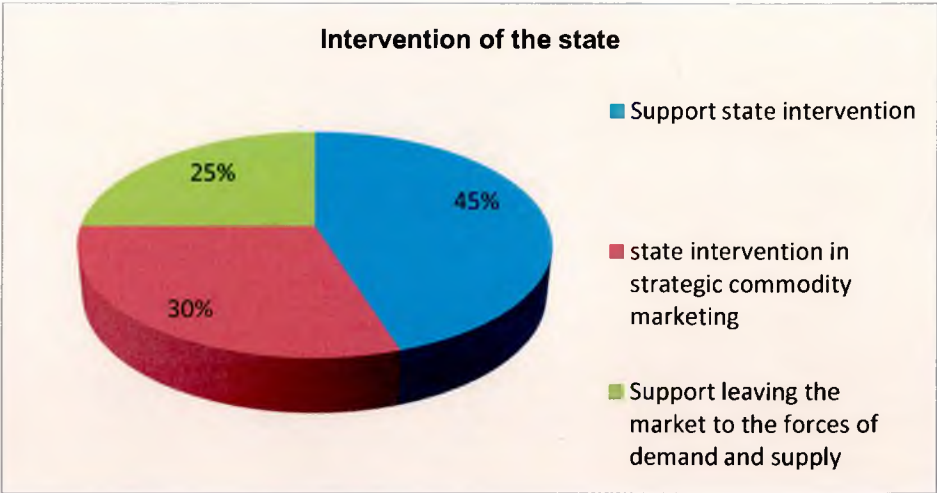


Figure 6.6 Intervention of State

6.1.11The Role of the Private Sector

Seventy-five percent of respondents pointed out that the role of the private sector in Libya is not important due to the lack of encouragement to the private sector as well as the absence of regulations governing their work. Furthermore, the economic environment is not appropriate for private sector in Libya. Twenty-five percent of respondents said the role of private sector has become important after the changes that have occurred in the economic structure and the moving of the ownership of agricultural projects to workers since the nineties. See Figure 6.7 for details on the role of the private sector in Libyan agriculture.

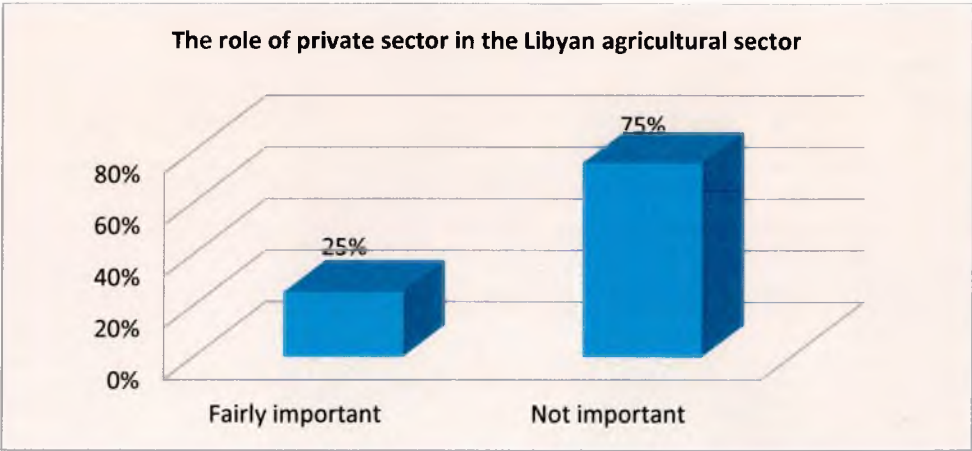


Figure 6.7 The role of private sector in the Libyan agricultural sector

6.1.12 Reasons behind the changing of agricultural policies approach

In Libya, there have been many changes in the agricultural policy from three- and five-year plans to annual programmes. Figure 6.8 below indicates that 60%

of policymakers consider the reason for this change as being financial. Oil revenues are the main sources of finance for all other sectors, including agriculture, hence the sharp drop in oil prices in the early eighties led to decrease development allocations in Libya. In addition, proponents of this reason noted that financial allocations and investments pumped into the agricultural sector were not economically profitable. Therefore government was looking for other sources or other sectors to invest instead of agriculture. Other policymakers (25%) pointed out that the natural conditions were the reason for the change in approach through the changes of rainfall rates, soil productivity, and crop structure. Ten percent of respondents believe that the agricultural policy was impacted by public policy in terms of the decisions or policies, which had been changed through political pressure.

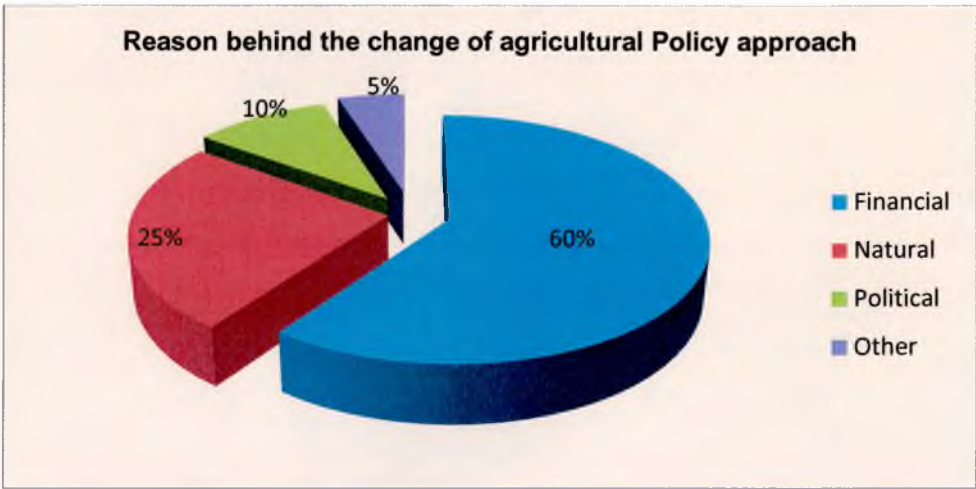


Figure 6.8 Reason behind the change of agricultural approach

6.1.13 Comparing policy approaches

Figure 6.9 below highlights the fact that agricultural policies in the nineteen-seventies and the nineteen-eighties (three- and five-year plans) were devised in order to adopt the best approach for the Libyan agricultural sector. Such policies effectively contributed to economic development. Moreover, the previous policies were more effective according to 60% of the views of policymakers. The increase in the production as well as high rates of self-sufficiency in some crops were indications of the success of long-term plans and programmes compared to the poor performance of the agricultural sector recently. On the other hand, 40% of policymakers were of the view that

although the performance of current policy is poor, it is still developing and needs more support to be successful.

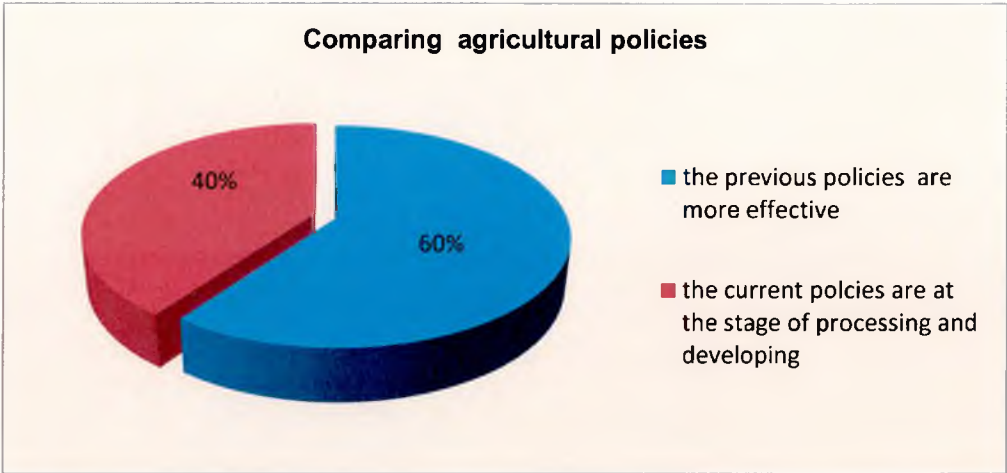


Figure 6.9 Evaluation of agricultural policies

6.1.14 Mechanism of making decisions

Concerning the mechanism of making decisions, Figure 6.10 (below), shows that 50% of policymakers made decisions based on available data despite the difficulty in information collection. Twenty-five percent of respondents pointed out those decisions are often taken based on their experience, with another 25% indicating that the decisions were taken because of instructions from top government officials. In addition, the participants suggested that there is no clear mechanism when making decisions in the agricultural sector. This affected the success of agricultural policies.

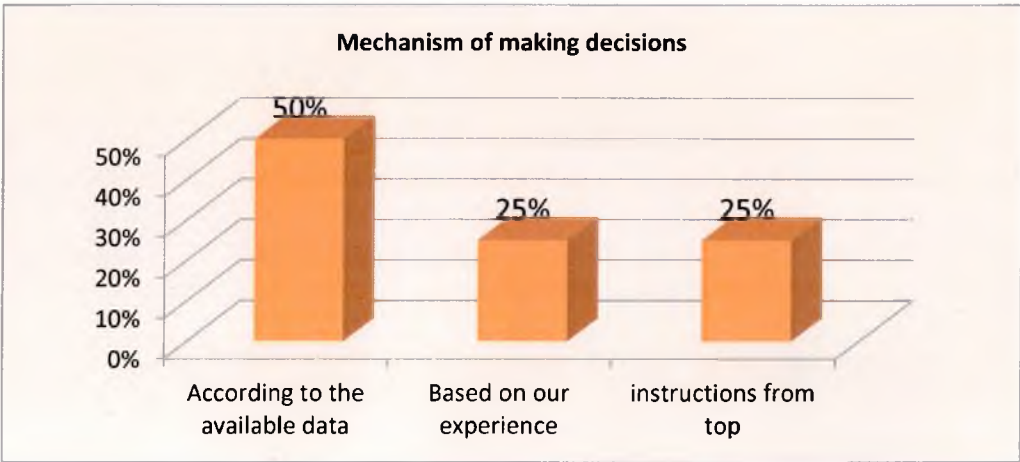


Figure 6.10 Mechanism of making decisions

6.1.15 Effectiveness of annual policy approach

Sixty percent of respondents indicated that the annual policy approach is not effective and evidence of this is the weak agricultural performance in recent years. Twenty percent of respondents note that policies need to undergo some development. On the other hand, 20% agree that the annual approach is appropriate for the macro-policy implementation. See Figure 6.11 for details on effectiveness of annual policies.

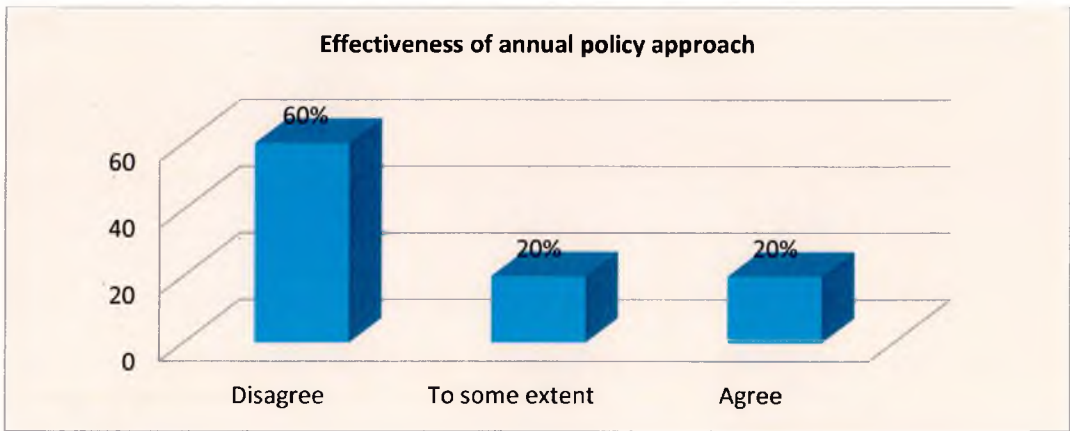


Figure 6.11 Effectiveness of annual policy approach

6.1.16 Achieving the objectives of agricultural policy during the study period

Table 6.3 below indicates which of the two approaches have contributed effectively to the achievement of policy objectives from the perspective of policy makers. The first approach contributed effectively in terms of the protection of agricultural resources, the increase of the self-sufficiency ratio and increasing proportion of the agricultural sector contribution to GDP. The second approach has been more effective in terms of increasing use of modern technology and organising the agricultural marketing zonally.

Table 6.43

Achieving the Objectives of Agricultural Policy during the Study Period

	The Objective	1973-1985				
		VE	E	FE	NE	NE at all
1-	Preserve and protect the natural resources while exploiting them in the ideal ways.	25%	75%			
2-	To achieve self-sufficiency of agricultural products	25%	75%			
3-	Development of laws and Agricultural legislation			50%	50%	
4-	The application of modern technological means			60%	40%	
5-	Organise the agricultural marketing on the agricultural zone's level.			50%		
6-	Increasing proportion of the agricultural sector contribution in to the national income.	70%	30%			
	The Objective	1986-2007				
		VE	E	FE	NE	NE at all
1-	Preserve and protect the natural resources while exploiting them in the ideal ways.			50%	50%	
2-	To achieve self-sufficiency of agricultural products			20%	80%	
3-	Development of laws and Agricultural legislation			50%	50%	
4-	The application of modern technological means		65%	35%		
5-	Organise the agricultural marketing on the agricultural zone's level.		55%	45%		
6-	Increasing proportion of the agricultural sector contribution in to the national income.				75%	25%

VE (very effective) E (effective) FE (fairly effective) NE (Not effective) NE at all Not effective at all

6.1.17 Factors responsible for the failure to achieve the objectives of agricultural policies

Table 6.4 below shows that majority of factors responsible for the failure to achieve the objectives of agricultural policies recently were related to the nature of agricultural policy and mechanism of decision-making and the relationship between sub-policies and macroeconomic policy. Seventy-five percent of respondents agree that the problem is the unequal subsidy policies, and policies not addressing the needs of small farmers. Also the adoption of un-integrated agricultural plans and policies is the main problem for the failure. About 70% of respondents indicated that the lack of active co-ordination and co-operation between the officials' is not a problem. Also 80% of participants stated that the duality and overlapping of the authority of officials is problem.

Table 6.54 Factor responsible for the failure to achieve the objectives of agricultural policies

	Statement	VB	B	FB	NB	NB at all
1	The duality and overlapping of the authority		80%		20%	
2	Lack of active co-ordination and co-operation between the official bodies				30%	70%
3	The adoption of un-integrated agricultural plans and policies	60%	40%			
5	The un-equal subsidy policies in the state, which are not meeting the small farmers' needs.	75%	25%			

VB very big problem **B** Big problem **FB** fairly problem **NB** not problem **NB at all** Not problem at all

6.1.18 Factors facing the implementation of agricultural policies

In terms of the significance of the main factors facing the implementation of agricultural policies, 85% of the participants agree that factors such as climate (temperature and wind), lack of agricultural planning, weak policy on subsidy for farmers, weak contribution of private sector in the agricultural sector and the weakness of agricultural finance are very significant constraints. Eighty percent of respondents indicated that the absence of agricultural information, extension services and guidance, absence of government marketing institutions in all agricultural regions, the absence of control systems and follow-up in the government bodies are significant constraints. On the other hand, 60% of respondents pointed out that biological reasons concerning insects and plant disease, lack of irrigation techniques, absence of food processing industries, size of farms and the absence of agricultural regulations on the export of both chemical and natural fertilisers are not significant constraints to agricultural policy implementation. See Table 6.5 below.

Table 6.65 Factors facing the implementation of agricultural policies

	Statement	VS	S	FS	NS	NS at all
1	Climate (temperature and wind)	85%	15			
2	Lack of agricultural policies	85%	15			
3	Weak of subsidies and finance policy	85%	15			
5	Lack of the role of private sector	85%	15			
	Absence of agricultural information, marketing institutions and monitoring policies		80%	20 %		
	Lack of irrigation techniques, size of farms and plant disease			15 %	60%	25%

6.2 Assessment of agricultural policies through the perspective of small farmers for the periods 1973-1985 and 1986-2007

This section aims to assess the impact of agricultural policies over the periods of study from the viewpoint of farmers.

This part based on the data in the official records of the Secretariat of Agricultural Sector in Al Jabel Al Akhder Region in terms of the number of registered farms in the Secretariat to choose the farms sample and to have an idea about the distribution of farms in the region and the type of agricultural activities in each farm

Due to lack of reliable farm records to aid the assessment of the impact of policies, the researcher divided factors that impact on agricultural activity at the farm into three types 1) social economic factors 2) agricultural factors, 3) government initiatives Linear regression and logistic regression were used to identify the relative importance of each independent variable. Table 6.6 shows the variables used in the analysis.

Table 6.76 Variables used in the analysis

Factor	Type	Scale	Technique
Annual gross sales	Dependent	Interval scale	Linear regression
Agricultural performance	Dependent	Categorical scale	Logistic regression
Socio economic factors			
Age	Independent	Interval scale	Linear regression
Education	Independent	Interval scale	Linear regression
Experience	Independent	Interval scale	Linear regression
Agricultural factors			
Farm size	Independent	Interval scale	Linear regression
Number of workers	Independent	Interval scale	Linear regression
Fertilisers	Independent	Interval scale	Linear regression
Factors related to government initiatives (agricultural policies)			
State's interest	Independent	Categorical scale	Logistic regression
Infrastructure	Independent	Categorical scale	Logistic regression
Cooperative societies	Independent	Categorical scale	Logistic regression
Market condition	Independent	Categorical scale	Logistic regression

6.2.1 The distribution of socio economic factors

Age

Thirty-five percent of farmers were over 60 years old, while 28% within the 51-60 year age group, and the rest were under 50 years old.

Qualification

Thirty percent had a university degree, while 22% had College or Technical school qualifications, and about 30 % had secondary school qualifications, 14% had primary school qualification, whilst the rest were illiterate.

Family size

In terms of number of family member, 26% had over 11 members, while 22% had between 9-11 members, whilst 52 % had more than 3 members.

Non-agricultural income

Seventy-eight percent of the total sample had no non-agricultural income.

Experience

With respect to the experience, 12% had experience of more than 40 years and 48% had experience of 21-40 years, while only 16% had experience of less than 10 years

Linear regressions

The results of multiple linear regressions as indicated in Table 6.7 below shows that there is a positive relationship between annual gross sales and level of education and experience.

Table 6.87 multiple linear regressions of socio economic factors

Variables	Coefficient	S.E	P- value	r ²	f	Significance f
Constant	2.543	.681	0.001	0.53	5.882	0.002
Age	-.594	.184	0.002			
Education level	.365	.124	0.005			
Experience	.624	.174	0.001			

a. Predictors: (Constant), Experience, Education level, Age b. Dependent Variable: Annual Gross Sales

On the other hand, there is negative relationship between annual gross sales and age. This is acceptable economically, as any increase in the experience in the agricultural field and education level impact positively on performance at farm level, while increasing age will negatively affect the performance of farmers. The value of r² is approximately 0.53

6.2.2 Farm characteristics

A farm size of less than 20 ha is the dominant feature of farm holdings in Libya. Fifty-two percent of farms in Al Jabal Al Akhder Region were less than 20 ha, while 28% of sample farms were 20-40 ha, and the rest of sample was over 40 ha. Forty-two percent of the farms were family property, and 14% were inherited, while 44% had been bought.

Due small size of farms, 56% of farms employed 3-8 workers, while 24% employed 9-11 workers; the rest of farms employed over 11 workers.

The nature of agricultural activity was varied. Forty-eight percent of the farms were irrigated, while 12% were rain fed farms. Forty percent of the farms were mixed (irrigated and rain fed farms).

The crops grown were also varied, due to the large proportion of irrigated farms in the region. About 40% of farms produced vegetables, while 36% produced vegetables and fruits, and 4% produced grains. Other farms were mixed (grains and vegetables and fruits).

There are no farms that depended only on the organic fertilizers. Thirty-eight percent depended only on chemical fertilizers, 62% depended on both organic and chemical fertilizers. With regard to the costs of fertilizers that have been used by farmers, about 28% estimated cost of fertilizer used per year between 7000-9000 LY.D, while 20% between 5000-7000 LY.D per year and about 26% between 1000-3000 LY.D and only 4% of sample estimated the production costs as more than 9000 LY.D per year.

6.2.3 Choice of crops

When farmers were asked about the reason for choosing crops, 78% of the sample chose profitable crops, while 18% chose to grow these crops by trail, while the rest chose to grow their crops for other reasons. Figure 6.12 shows details of reasons for farmers' choice of crops.

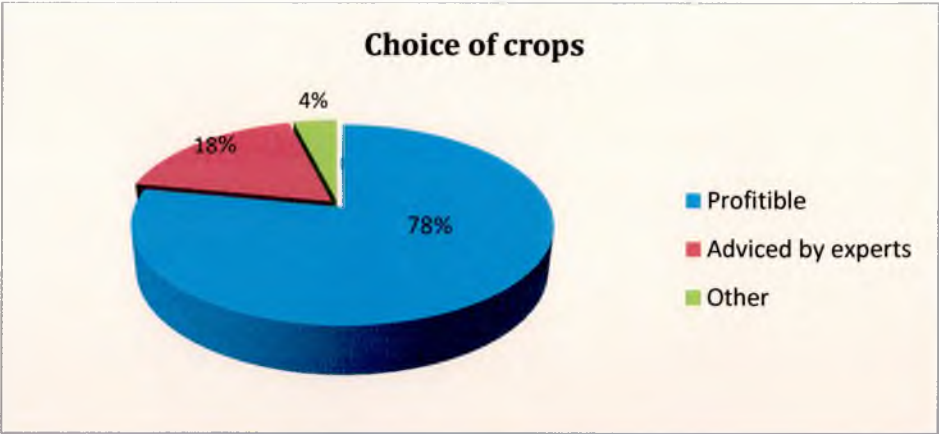


Figure 6.12 Choice of crops

Multiple regression analyses were conducted to examine the relationship between annual gross sales as dependent variable and farm size, number of workers, fertilisers, and agricultural policy as independents variables. The results as shown in Table 6.8 below indicate that there is positive significant association between annual gross sales, number of workers and fertilisers and farm size. In addition, there is statistically significant negative relationship between annual gross sales and agricultural policy. The results also show that the annual gross sales depend on fertilisers more than other factors in the equation. The value of r^2 is approximately 0.50.

Table 6.98 Multiple Regression estimates for determinants of agricultural production at farm level

Variables	Coefficient	S.E	P- value	r^2	f	Significance f
Constant	0.858	0.421	0.047	0.50	11.52	0.000
Farm size	0.158	0.094	0.1000			
Number of workers	0.272	0.134	0.0483			
Fertilisers	0.355	0.115	0.0055			
Agricultural policy	-.152	0.492	0.75			

Dependent Variable: Annual gross sales

Dependency on fertilisers in production at farm level is shown in Table 6.9 below.

Table 6.109 Zero-order Correlation Coefficients between the output and inputs variables

Factor	Production	Size of farm	Number of workers	Fertilisers
Production	1.00	-----	-----	-----
Size of farm	0.522**	-----	-----	-----
Number of workers	0.559**	0.439**	-----	-----
Fertilisers	0.634**	0.513**	0.539**	-----
Agricultural policy	-0.03 **	0.15**	-.02**	-.05**

** Correlation is significant at the 0.01 level

There is a positive correlation coefficient of fertilisers (0.63) and production. The correlation coefficient of farm size and number of workers are 0.55, 0.52 and production respectively. On the other hand, there is negative relationship between production at farm level and agricultural policy where correlation coefficient was -0.03. There is also a negative relationship between agricultural policy and number of workers and fertilisers (-0.02, -0.5) respectively.

6.2.4 The role of the State in agriculture

Concerning the degree of the State's interest in the agricultural sector, Figure 6.13 below shows that majority of respondents (76%) stated that the state's interest was limited. Twenty-four percent of respondents noted that the state's interest in agriculture is big.

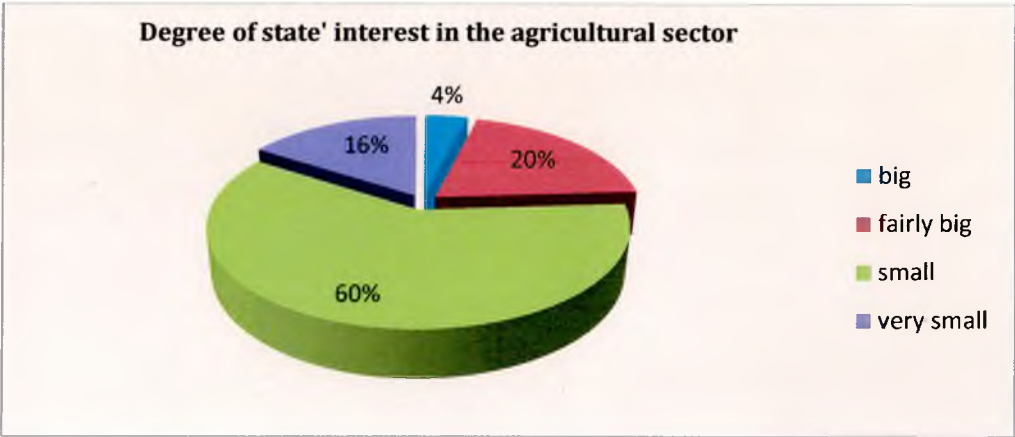


Figure 6.13 State's interest in agriculture

In terms of procedures for obtaining agricultural loans, 72% of the sample noted that it is fairly easy to get agricultural loan while 22% said that it was difficult to get agricultural loan. Infrastructure of the agricultural sector is not effective

according to 84% of the sample, while 16% said that it is effective. The role of cooperative societies is not effective according to 84% of the sample, while it is effective to some extent according to 16% of the sample. Market conditions are not effective according to 58% of the sample, while 42% suggested it is effective to some extent.

Table 6.1140 Distribution of factors related to agricultural policies

Question No	Variable	Frequency	Percentage	Cumulative percentage
Q3.4	Interest of state			
	Very Big	0	0	0
	Big	2	4	4
	Fairly big	10	20	24
	Small	30	60	84
	very small	8	16	100
Q3.5 statement 2	Procedure of agricultural loans			
	Very Effective	0	0	0
	Effective	3	6	6
	Fairly effective	36	72	78
	Not effective	9	18	96
	not effective at all	2	4	100
Q3.5 statement 1	Infrastructure			
	Very Effective	0	0	0
	Effective	7	14	14
	Not effective	41	82	96
	Not effective at all	2	4	100
Q3.5 statement 3	Cooperative societies			
	Very Effective	0	0	0
	Effective	0	0	0
	Fairly effective	8	16	16
	Not effective	40	80	96
	Not effective at all	2	4	100
Q3.5 statement 1	Market conditions			
	Very Effective	0	0	0
	Effective	0	0	0
	Fairly effective	21	42	42
	Not effective	27	54	96
	Not effective at all	4	4	100
Q3.8	Participating in decision making			
	Yes	2	4	4
	No	48	96	100
Q3.9 statement 2	Positive impact of current policy			
	Strongly Agree	0	0	0
	Agree	2	4	4
	Moderate	8	16	20
	Disagree	24	48	68
	Strongly disagree	16	32	100
Q3.9 statement 5	Negative impact of the gap between farmers and state			
	Strongly agree	29	58	58
	Agree	19	38	96
	moderate	2	4	100
	Disagree	0	0	0
	Strongly disagree	0	0	0

The results of the questionnaire show that 96% of the sample did not participate in any decision-making process of agriculture. Eighty percent of the sample confirmed that the current agricultural policies have not had any positive impact on the agricultural sector, while 16% were of a contrary view and pointed out that current agricultural policies have a positive impact but to some extent. Ninety-four percent of the sample agrees that the gap between farmers and government bodies is responsible for the negative impact on agricultural activity. See Table 5.9 below for details of factors related to agricultural policies.

Binary logistic regression was used to investigate the relationship between agricultural performance with farm as a categorical dependent variable and some factors relating to agricultural policy. Table 6.11 shows that there is no statistically significant negative relationship between the performance at farm level and State's interest and market condition, where regression coefficients are estimated by (-0.376; -1.384) respectively. There is no statistically significant positive relationship between the performance at farm level and infrastructure and cooperative society's role. Regression coefficients are estimated by (0.221, 0.143).

Table 6.1244 Binary logistic regression of factors related to agricultural policies

State's interest (x1)	Logit Y = Log (Y _i / 1-Y _i)	= - 0.415 - 0.376 X1
		(0.845) (0.508)
Infrastructure (x2)	Logit Y = Log (Y _i / 1-Y _i)	= - 2.471 + 0.221 X2
		(0.249) (0.745)
Cooperative societies (x3)	Logit Y = Log (Y _i / 1-Y _i)	= - 2.311 + 0.143 X3
		(0.410) (0.858)
Market condition (x4)	Logit Y = Log (Y _i / 1-Y _i)	= 1.61 - 1.384 X4
		(0.439) (0.114)

The correlation matrix depicted in Table 6.12 below shows the relationship between the performance at the farm level and some variables related to agricultural policies is very low. There was a negative relationship between the performance at the farm level and the state's interest and market conditions. The correlation coefficients were estimated at (-0.09; -0.22) respectively.

There was a positive relationship between the performance at farm level and infrastructure and cooperative society's role. The correlation coefficients estimated as (0.04, 0.02). On the other hand, the highest value of correlation coefficients among variables related to agricultural policies was between infrastructure and market condition (0.59). See Table 6.12.

Table 6.1342 Zero-order Correlation Coefficients between agricultural polices factors

Factor	Farm performance	State's interest	Infrastructure	Cooperative societies	Market conditions
Farm performance	1	-----	-----	-----	-----
State's interest	-0.09	1	-----	-----	-----
Infrastructure	0.04	0.29	1	-----	-----
Cooperative societies	0.02	0.62	0.33	1	-----
Market conditions	-0.22	0.37	0.59	0.46	1

Logistic regression was conducted to investigate the relationship between agricultural performance at farm and agricultural policy. The results showed that there is no statistically significant relationship between the performance at farm level and agricultural policy. See Table 6.13 below for details.

Table 6.1443 logistic regressions of agricultural policy and performance at farm level

Variables in the equation	B	S.E.	df	Sig.
Constant	-3.135	2.889	1	.278
Agricultural policy (1)	1.427	2.917	1	.625

a. Variable(s) entered on step 1: Agricultural policy.

6.3 Interviews with farmers on assessment of agricultural policies

Due to the importance of information that can be obtained through interviews with farmers, as the main focal group in any agricultural policy, interviews were conducted with farmers on the assessment of agricultural policies. The interviews were transcribed and analysed thematically. Due to political conditions in Libyan during the period of field study (Revolution of 17th February), only 10 farmers were chosen as a sample from Al Jabal Al Akhder region.

6.3.1 The role of agricultural policies in agricultural development at farm level

Referring to the impact of agricultural policies in Libya on the agricultural sector, 90% of the interviewees agreed that the agricultural policies in Libya had a great impact on the agricultural sector in general and agricultural activities at the farm level. This is evidenced in the quote that:

"The agricultural production and cultivated areas have seen dramatic increase during the nineteen-seventies and nineteen-eighties (during the period of the three- and five-year plans) and led to improved financial situation and social status of farmers where farming became attractive and provided adequate standard of living. This was the result of the interest of the state through implementing integrated agricultural policies, such as lending, support policy, pricing policy and extension policy". See Appendix C.

In contrast, the absence of agricultural policy and the absence of the state's role in the agricultural sector have led to decrease in production, decreased cultivated areas and changing crop structure to commercial crops that rely on fertilizers to get quick profit. Also some farmers have used agricultural land for non-farm activities (See Figures 6.14) to provide financial returns to improve their standard life. While 10% of the interviewees suggested that the state has so far not been implementing agricultural policies that enable them to practice better agricultural practices they agreed that the period between 1973 and 1986, when medium term plans were implemented, were somewhat better than the current period where annual plans are implemented.



Figure 6.14 Exploitation of agricultural land for residential activities (2012)

Source: Author field work

6.3.2 The nature of decision-making

In terms of the nature of decision-making process and the extent to which farmers are participate in the decision-making process, the extent of their ability to communicate with officials; the answers are disappointing to a large extent where 75% of the participants pointed out that

"We did not participate or even discuss any decision or agricultural policy that has been applied and we do not have any idea about how the decision was taken and the gap between farmers and the officials of the sector is very large. Some farmers have never met any official of the Secretariat of Agriculture". See Appendix C.

Twenty-five percent of farmers interviewed noted that some decisions were heard and discussed with farmers in the cooperative societies in the nineteen-seventies and nineteen-eighties. However, no interviewees participated or even discussed any policy before its implementation in recent times. The policy decisions are *"from above"*. Furthermore, the participants stated that, in recent years, there has not been any clear policy, but they were using their personal skills at the farm level, which has a negative impact on the use and depletion of natural resources such as water and land. The goal of farmers was to get profits even if they had to resort to excessive of fertilizers.

It is worth mentioning that 90% of the participants appreciate the Governor of Al Jabal Al Akhder region when in 2005 he met farmers for the first time about the possibility of exploiting some of their land to grow corn. The Al Jabal Al Akhder region is characterized by a large amount of livestock and at that time, the feed prices were high. Thus, the governor stated that there was the possibility of government to provide equipment and machinery for planting corn, and treadmills to accommodate their corn production if farmers would allocate some of their lands for the cultivation of the crop.

Farmers welcomed this decision and they felt the importance of being an important target group that have a role in the decision-making. Unfortunately the

change of political administrative system led to the failure of this project but it was a good attempt to involve farmers in agricultural decision-making.

6.3.3 The changing in agricultural economy

The interviewees expressed varying views regarding the changes that have occurred in the agricultural economy in Libya, the role of the State and the private sector. Sixty percent of the interviewees noted that the state was supervising the strategic agricultural projects, such as controlling desertification by supporting farmers to plant grains. See Figures 6.15 and 6.16 below.



Figure 6.15 Project of Al Sareer to stop desertification (1985) before transferring the ownership to the workers Source: Zidan (2007)

The ownership of these projects has been transferred to farmers but unfortunately they are without any support and the projects have failed. See Figures 6.17 and 6.18. Forty percent of the participants stated that:

"The transfer of ownership of the agricultural projects was a positive step but the intervention and supervision of state should have continued in terms of provision of production inputs such as fertilizers, seeds and machinery. These inputs are now provided by private sector at high costs." See Appendix C.



Figure 6.16 Abu Shieba (Sert) Agricultural Project (1985) before transferring the ownership to the workers
Source: Zidan (2007)

The transfer of ownership was due to several reasons. *"The state increased investments in other sectors that are more profitable than agriculture. Also the economic blockade led to lower yields and funding for such projects. Although the transfer of the ownership of these projects to the private sector was a positive move, transferring the projects without any support led to remarkable decrease in production"*. See Appendix C.

Commenting on the private sector, all the interviewees confirmed that the absence of agricultural policies have left the private sector with no clear role, regulation or laws.



Figure 6.17 Functional factory at Al Jabal Al Akhder (2012) after transfer to private sector



Figure 6.18 Functional factory at AL Jabal Al Akhder (2012) after transfer to private sector
Source: Author field work

6.3.4 The role of state in providing agricultural services and facilities to farmers

All the participants agreed that the oil sector was more attractive for workers and this led to migration of workers from farms to oil companies in the early stages of the discovery of oil. Therefore, in the nineteen-seventies and nineteen-eighties, the State made plans to give more attention to the agricultural sector by *"providing farmers all the necessary for agricultural activity, such as private home, agricultural land, equipment, machinery, seeds and fertilizers and animals"*.

On the other hand, many food industries such as mills, pasta factories, and juice factories have been established and loans made available to farmers through agricultural banks. Furthermore, extension services or veterinary centres were established across the country to support farmers. There was also an incentive pricing policy. Through these interventions, the agricultural sector achieved large growth in terms of production or self-sufficiency in crops such grains. This in turn led to decent life and adequate standard of living for farmers. The interviewees also stated that

"When the state handed over state farms to private farmers, the government gave monthly salaries for three years for them to stabilize and this was a large motivation for farmers". See Appendix C.

However, in the nineties, "Farmers became completely separate from government and also proper planning was missing and the gap between farmers and the state increased. The absence of cooperative societies, which were responsible for providing inputs at affordable prices, the reduced role of agricultural extension and farmers cultivating crops of their choice and using pesticides and chemical fertilizers led to the decline in cultivated areas, production and commercial crops become the dominant feature of the agricultural sector" See Appendix C.

6.3.5 The impact of changing the agricultural policies approach on performance of farmers.

This section analyses the effects of changing agricultural policies on farmers, productivity, production levels and structure of crops cultivated by farmers. All the interviewees indicated that agricultural policies in the nineteen-seventies and nineteen-eighties, were transparent and aimed at increasing production through supporting farmers with loans, wells and marketing incentives to increase cultivated areas as indicated in the following quote.

"There was significant interest in cultivation of grain, apples and citrus fruits because of the price incentive for these crops by the state". See Appendix C.

Most farms planted grain crops because of state policy that encouraged its production and created a ready market at remunerative prices. Also the State provided incentives for the production of crops such as apples and grapes by setting up factories that depended on such crops. Thus, agricultural produce was marketed through the state at attractive prices and these encouraged farmers to increase their output. In addition, "Cooperative societies played an effective role in providing inputs to farmers at reasonable prices". See Appendix C.

All the interviewees pointed out that in the recent years, as a result of the changes in government policy on transfer of ownership of agricultural projects, from state to private owners, absence of government funded factories and mills,

of marketing incentives, and ineffectiveness of cooperative societies, combined with the reduced role of the state overseeing the sector, led to reduced agricultural activities.

"These have left farmers with high input prices and low rates of production of food crops. Farmers have thus shifted to cultivating commercial crops and are increasing their production through the excessive use of chemical fertilizers without technical advises. This has led to a deterioration of land and has increased farmers input cost ". See Appendix C.

About 20% of the participants stated that they have reduced their farm acreage due to high cost of inputs and 40% of them said that agriculture is no longer a sustainable business but has become a "traditional occupation" as implied in the following quote.

"Agriculture is no longer a lucrative career and does not provide enough income like other economic activities, but farmers see this career as an honourable profession with a great history in their religion. The prophet Mohammed, (peace be upon him), worked as a shepherd grazing his herds, and there are many verses in the Quran and authentic hadith that encourage action on agriculture, which indicate the relation and benefit to human life". See Appendix C.

6.3.6 Evaluation of first agricultural policies during 1973-1985

All the respondents' participants agreed that during the period 1973-1985 (period of three- and five-year plans).

"Agriculture as an activity and profession in this period was better than the current period. Government provided incentives such as housing and other inputs and thus the agricultural sector was attractive to engage in. Also agricultural inputs, particularly fertilizers, seeds and machinery were made available at reasonable prices to farmers through cooperative societies. Government also insured farmers against the peril of fire". See Appendix C.

The interviewees indicated that during this period, agricultural centres of extension and veterinary services were available in all regions and policies made it easy to get loans for land reclamation and the drilling of wells for irrigation purposes. Furthermore, pricing policies were effective with government purchasing crops at reasonable. In addition, international expertise in the field of agriculture was engaged to advise farmers. All this in turn led to increased production, productivity and increased the cultivated areas, as well as remarkable improvement in self-sufficiency in a range of crops by the State. Participants indicated that the performance of agricultural sector during 1973-1985 in general was very good with 75% of the participants' noted that the main drawback of these policies was:

"The weak of supervision, monitoring and evaluation of policies led to increased costs of agricultural inputs that burdened the state budget. Twenty-five percent of the interviewees stated that the limitation of policies during this period was the involvement of farmers in a decision-making ". See Appendix C.

6.3.7 Evaluation of current agricultural approach

Regarding the assessment of current policies, all the respondents pointed out that the *"Impact of annual agricultural plans in Libya is negligible"*. Such plans did not give the farmers any idea about what they will produce this year or next year nor an indication about the market needs. According to 65% of participants, annual plans in the agricultural sector were "vague" and did not give a clear idea about what is going on, especially since the agricultural sector has peculiar characteristics such as the length of production and the nature of the agricultural products, making it different from other sectors. Thirty-five percent of respondents indicated, *"There was no support for both input or output and resulting in higher production costs"*. See Appendix C.

This led to losses for the farmers and agriculture, as a source of income is no longer encouraging for farmers to have a decent life for themselves and their families. This in their opinion led to the phenomenon of the allocation of agricultural land for non-agricultural activities.

In addition, 25% of the interviewees said that *"The agricultural sector did not need an annual plan because it is activity characterized by long periods between planting period and the period of harvest and also needs a policy for a period of post-harvest such as storage and marketing, and these stages need long-term policies"*. See Appendix C.

6.3.8 Funding and marketing policies

With respect to funding and marketing policies during two different policy periods, 80% of the sample stated that Agricultural Bank was responsible for providing loans for digging wells. However, of late, farmers have not been able to service the loans due to the high costs of inputs and low financial return. While 20% of the participants said funding policy during the period 1973-1987 was good enough and were links with other policies on extension and subsidies. However, in the second period from 1987 to -2007, funding policies were linked to other economic policies, and this led to a decline in production. With regard to marketing policy, the entire sample noted that in the nineteen-seventies and nineteen-eighties, the farmers sold their produce to the State with prices known in advance. The National Marketing Company was responsible for marketing. However, of late, farmers sell their produce to wholesalers and retailers, and there is no State mechanism to supervise and control prices of inputs. This has created market uncertainties.

6.3.9 Planning agricultural policy

Thirty-five percent of the participants stated that agricultural policies must be long-term and consistent with the other sectors policies, especially the industrial sector. In addition, agricultural policies must be consistent with each other. (An issue raised was that now, for example, inputs policies and marketing policies are not consistent). Thirty-five percent of respondents are of the view that policies should be monitored and evaluated to ensure that they achieve the desired impact. In addition, the need to involve farmers in the design or identification of appropriate policies for agricultural sector is very important. This could be done through the secretariats of agricultural or cooperative societies. Thirty percent of the participants recommended increased awareness creation about the vital economic and social benefits of the agricultural sector.

Respondents noted that government should pay more attention to financing and support policies and pay more attention to development of research programs on the development and improvement of varieties of agricultural crops. In addition, they indicated the need for the development of an integrated approach for agricultural research to find solutions to technical problems and integrate new technologies appropriate for the environmental conditions prevailing Libyan.

6.4 Chapter summary

Before the discovery of oil in Libya, the agricultural sector contributed about 30% to the GDP and employed about 70% of the labour force. Because of the discovery of oil and its attendant huge financial returns, Libya sought to develop the agricultural sector through agricultural policies and programmes. The period 1973-1985 (the first period of this study) was the time in which most of the important agricultural policies were formulated and implemented.

The Libyan agricultural sector during this period witnessed remarkable development in the total area under cultivation, agricultural production and, therefore, high rates of self-sufficiency in some crops. This applied particularly to cereals. During this period, the contribution of the agricultural sector to the GDP improved remarkably.

Due to the fall of oil prices in the nineteen-eighties, budgetary allocations for agricultural development decreased. This led to the adoption of annual policies or programmes that had a negative impact on the sector in terms of production, productivity and the contribution of the agricultural sector to the GDP.

Evaluation of key variables related to agricultural resources and contribution of agriculture to the Libyan economy, shows the number of workers declined. This was because of labour migration to the oil sector, from about 28% in 1973 to 20% in 1985. The decline continued until it reached about 5.2% of the total labour force in 2007. The development allocation for the agricultural sector also declined significantly, from about 21.5% of total development allocations in 1973, to about 12.5% in 1985. This continued to decline to about 1.6% in 2007. Significantly, during the first period (1973-1985), there was increased cultivated

area and productivity. These meant increased contribution of the agricultural sector to the GDP, as well as significant improvement in *per capita* agricultural output. During the second period (1986-2007), there was a decline in all the variables related to agricultural resources and the contribution of the agricultural sector to the Libyan economy. The second period was characterised by a continuing decline in employment and budgetary allocations to the agricultural sector, as well as a lower contribution of the agricultural sector and lower *per capita* of agricultural GDP. The results also showed an increase in the import cost of agricultural commodities, especially in the second period, because of the low performance of the sector. Thus, the Libyan agricultural trade balance suffered from a deficit during the second period of the study.

The findings show that there are no clear mechanisms for decision-making in the agricultural sector in Libya. The limited involvement of the private sector in policy formulation has resulted in low agricultural productivity. Most of the respondents did not participate in any decision on agricultural and there was large gap between farmers and those responsible for the agricultural sector. The study shows that the farmers have sufficient experience in the field of agriculture and are educated. Both factors are reflected in the performance of the sector. The study confirmed that small agricultural land holdings are typical in Libya. It was noted that there is no clear policy on what crops farmers could cultivate, but farmers tended to cultivate profitable cash crops with heavy reliance on chemical fertilizers to the detriment of the environment.

There was no significant effect of current agricultural policies on farming performance, for any of the variables considered. The later related to the State's interest, the role of cooperative societies, the infrastructure of agricultural sector, and the market conditions. However, the farmers were of the view that agricultural policies in the period 1973-1985 played an important role in the development of the agricultural sector in Libya. This was through the formulation and implementation of effective policies, which led to increases in production and cultivated areas. There was improved national food self-sufficiency in some crops such as grain and fruits. On the other hand, the absence of appropriate policies in the second period of study (1986-2007), led to the deterioration of the agricultural sector and resulted in a poor economic

and social situation for the farmers. The Agricultural Associations Cooperative was instrumental in improving performance at the farm level by providing farmers with production inputs at reasonable prices and providing a meeting point for farmers. However, its absence in the second period (1987-2007), led to importers of agricultural inputs exploiting farmers, which led to farmers' reluctance to increase cultivation and instead use their farmland for non-agricultural activities.

It was found that policy makers:

1. Were over-reliant on oil revenues to develop the agricultural sector. This tailed off with the decline in oil prices and was the main reason behind the change of approach in agricultural planning policy, the shift from medium-term plans to annual plans.
2. Had no clear guidelines for agricultural decision-making.
3. Had a major communication gap between those responsible for agricultural decision-making and farmers.
4. Had no private sector element in their deliberations. The absence of the private sector playing an active role in agriculture was an issue. An effective private sector could have contributed to providing a suitable environment for a competitive market. However, what happened was a disagreement between the decision-makers about the importance of State intervention in the agricultural sector. Comparing the approaches to policy formulation and implementation between 1973 and 1985 and 1986 and 2007, all the policy makers agreed that agricultural policies for the period 1973-1985 were more effective in terms of policy objective achievement and the performance of the sector.

From the perspective of farmers, the agricultural sector during the period 1973-1985, was characterized largely by appropriate agricultural policies. These policies included pricing policies that provided a profit margin for farmers, and marketing policies that ensured the marketing of their produce where the state purchased surplus production. In addition, the active role played by the cooperative societies and the availability of extension and veterinary services, led to an increase in production at farm level and improved farmers' incomes,

which in turn led to improve the living standards of farmers. By contrast, farmers stated that the state's interest, in the second period of the study (1986-2007), decreased dramatically, to become negligible. Implementation of pricing or marketing policies and the reduction of the active role of cooperative societies and extension services isolated the state from the key stakeholders, farmers. Furthermore, agricultural decisions at the farm level, such as which crops to cultivate, area size to cultivate, quantities and type of fertilizer and time of application, all become dependent on the farmers themselves. This led to excessive reliance on the use of chemical fertilizers to increase production and the conversion of agricultural lands for non-agricultural activities to improve financial returns for farmers and their families. The major drawbacks of agricultural policies in general was the clear absence of the involvement of farmers in the process of decision making as well as the communication gap between farmers and those responsible for the sector. In terms of comparing the two policy approaches, farmers believe that agricultural policies in the first period (1973-1985) was more effective in terms of support, funding and state interest, all of which impacted positively on the performance at farm level.

In the next chapter, these findings will be discussed in relation to the existing literature that was reviewed in Chapters Two and Three; conclusions and recommendations will then be made in Chapter Eight.

CHAPTER SEVEN: DISCUSSION

7.0 Introduction

This Chapter discusses the findings of the research as presented in the previous chapter in relation to existing literature on agricultural development as reviewed in Chapters Two and Three.

7.1 A critical assessment and analysis of the research findings

Figure 7.1 below summarizes the key research findings and research outputs in diagrammatic form. It shows the connection between the findings and existing literature on agricultural policy and development in general and on Libya. These findings are set out in relation to the research issues that emerged from critical consideration of, and reflection on, these bodies of literature, along with the most appropriate methodological strategy employed in this enquiry, namely, the triangulation process. The three points of the triangle for the purposes of this study consisted of 1) policy documents 2) policy makers and 3) policy receivers as shown in Figure 7.1 below.

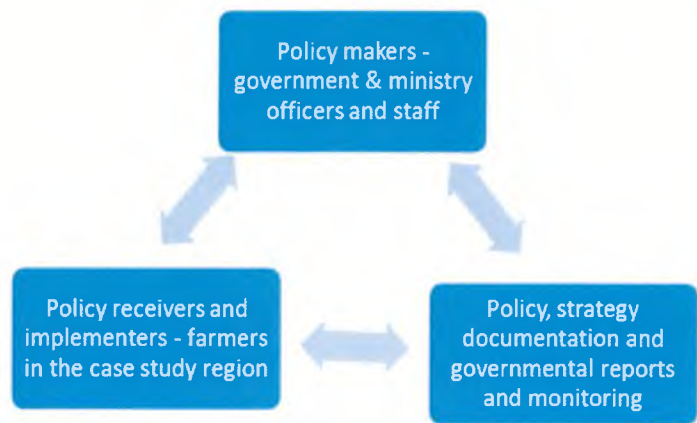


Figure 7.1 The process of triangulation (from Rotherham pers. comm.)

A critical assessment of the research findings as shown in Figures 7.2 and 7.3 below, allows the following conclusions to be drawn:

- 1) The main factor determining the role of the Libyan agricultural sector in national development was the nature of the agricultural policies at the time.
- 2) Subsidy and pricing policies are critical factors in the effectiveness of performance at farm level.
- 3) Oil revenues are the only source of financing for development projects in Libya and the reason for the change in agricultural policy approach was financial. That is, it was due to the drop in oil revenues in the early nineteen-eighties.
- 4) There is no clear decision-making mechanism in place for the agricultural sector. Furthermore, farmers did not participate in decision-making processes even though the research indicates that they are educated and have sufficient experience to participate in consultations.
- 5) Support, funding and subsidy policies are important and influential in both the policy periods considered. The absence of effective policies in the second period impacted negatively on the performance of the Libyan agricultural sector. In addition, the State's interest in the agricultural sector declined significantly during the period where policies were implemented annually.

The findings from the three points in the research triangulation, (evidence from policy-makers, farmers and documents), have been summarized in the columns of Table (see Appendix F - the first, second and third columns). These are presented alongside a column displaying the findings of the literature review- the fourth column; and a final concluding and summative fifth column. The latter presents the critical assessment of the findings. The themes presented in the first column of the table form the basis of the detailed and extended discussion that follows.

In contrast to the columns, the rows present the key issues addressed in the literature review:

- 1) The role of agriculture in development;
- 2) The impact of changing agricultural policy approaches on the performance at farm level;
- 3) The agricultural sector vs. oil and other sectors;

- 4) Mechanism of agricultural decision-making and the position of farmers; and
- 5) stakeholder evaluation of agricultural policy approaches in Libya.

Reading across a row (which addresses a given theme), and down a column (which presents a research findings), provide a succinct summary of the key findings. Taken together, this gives a comprehensive overview of the issues of changing agricultural policies in Libya. This constitutes the significant contribution to knowledge made by this research study (See Appendix F).

According to Cabral and Scoones (2006), fluctuations in the agricultural sector have been closely linked to changes in government intervention. State intervention has decreased because of the trend towards the liberalization of world trade; and direct intervention by the state has been replaced with indirect intervention, such as a focus on rural development. According to Van Huylenbroeck, Lauwers and Fernagut (2006), this shift of intervention in policy tools has led to an expansion in the role accorded to a range of stakeholders, including farmers and their unions, as well as decision-makers.

The change in policy and government intervention that occurred in Libya led to changes in traditional agricultural policies (El Messallati, 2007), where the results of agricultural policies depends, largely, on the reactions of farmers towards these policies as well as the impact of the agricultural decision-making environment.

High oil revenues provided an appropriate environment for the financing of all development projects, including agriculture (GPCT, 1993). The agricultural sector received a lot of attention, especially within the framework of strategic economic and social transformation, and budgetary support, since 1973. This includes: the three-year plan (1973-1975); the first five-year plan (1976-1980) and the second five-year plan (1981-1985). These were medium-term plans and were followed by a strategic approach of annual policies from 1986 to 2007 (GPCT, 1996). These plans were implemented on the assumption that the development of the agricultural sector would lead to economic diversification and reduce the role of oil in the national economy.

In recent decades, Libya has adjusted its agricultural policies in order to overcome agricultural problems. It has optimized the use of agricultural resources, and accelerated the rate of agricultural development (Al Arbah, 1996). With the sharp decline of oil prices in 1985, the Libyan government was forced to reduce its spending (GPCT, 1996). This led to a change of approach in agricultural policy, namely, a move away from medium-term planning and towards annual plans and programmes, which in turn affected agricultural sector performance.

These research findings disagree with Diao *et al.* (2006), Byerlee, Diao and Jackson (2005), Brandt, Rawski and Lin (2005), Sonntag *et al.* (2005), and Huang and Rozelle (2008). This is with regard to the factors that determine the role of agriculture in national development such as globalization, integrated value chains, rapid technological changes, environmental constraints, and institutional innovation. On the other hand, the findings agree with Christopher *et al.* (2010) in the case of Nigeria, that the low role of agriculture was attributed to inefficient funding and poor implementation of agricultural policies.

The findings of the research also agree with observations made by researchers such as Krueger, Schiff and Valdes (1991), Binswanger and Deininger (1997), WB (2007a), and the European Commission (2008). This was with regard to support, funding, subsidy and pricing policies being critical factors in the effective performance of agriculture at farm level.

On the other hand, the findings conflict with Ammani (2011), Stevens (2003), Martin and Subramanian (2003), Gylfason (2006), Atsushi (2007), and McPhail (2008), where in these studies, the impact of oil discovery on other sectors in Libya, in the manner touched on and highlighted in the literature review, was not possible because there were no effective sectors affected by exchange rate change. This is where oil exports represent about 95% of the total exports, such as in Libya. The findings are in line the views of Ossowski (2003) in terms of the difficulty in predicting global oil prices and the flow of revenue. The findings also agree with Ammani (2011) and Omeje (2006), in terms of financial flows from oil revenues leading to the creation of a dictatorship regime, which controlled Libyan oil capital for 42 years.

The findings also agree with the World Bank (2011), Dyer, Boucher and Taylor (2006), and Narayan (2009), on the importance of farmer participation in decision-making. There is agreement too with Swinnen (2010), and Birner and Resnick (2010), in terms of the nature of the political regime, which may create distortions in the decision-making process. In this study, the issue was referred to by 25% of decision makers in that higher authorities hand down decisions without discussing them at decision-making committees. Eighty percent of them believed that the overlap between authorities is one of the main challenges facing the decision making process for agriculture in Libya.

In view of the high levels of education and extensive experience of Libyan farmers, there should be no difficulty in engaging them in the decision-making processes. Furthermore, in contrast to other countries, where stakeholders constitute a diverse body (such as sector officials, local and international institutions and organizations, private sector, companies and civil society), in Libya this body is composed solely of decision-makers and farmers (FAO, 2004; World Bank, 2008; Van Donge, Henley and Lewis, 2012).

Finally, the research findings from this study agree with reports from GPCT (1993 and 1996), AOAD (1994), and statements made by El Messallati (2007). This is in terms of support, funding, and subsidy policies, being important and influential as demonstrated by the differences in outcome from the two policy approaches. The results also agree with suggestions by Abdulgader (2005), El Messallati (2007) and El Shiakhi (2009) with regard to pricing policies, which led to increased cultivated area and production. On the other hand, the findings regarding annual plans conflicted with AOAD (2008) and El Messallati (2007). They stated that during the annual plan approach, Libya implemented crop structure policies to reduce the differences of production costs between regions. However, in this study, 96% of farmers contested and denied this. Instead, they were choosing cash crops to ensure high profit margins and appropriate agricultural incomes. This situation has even forced them to use agricultural land for non-agricultural activities, to generate returns that enable an adequate standard of living.

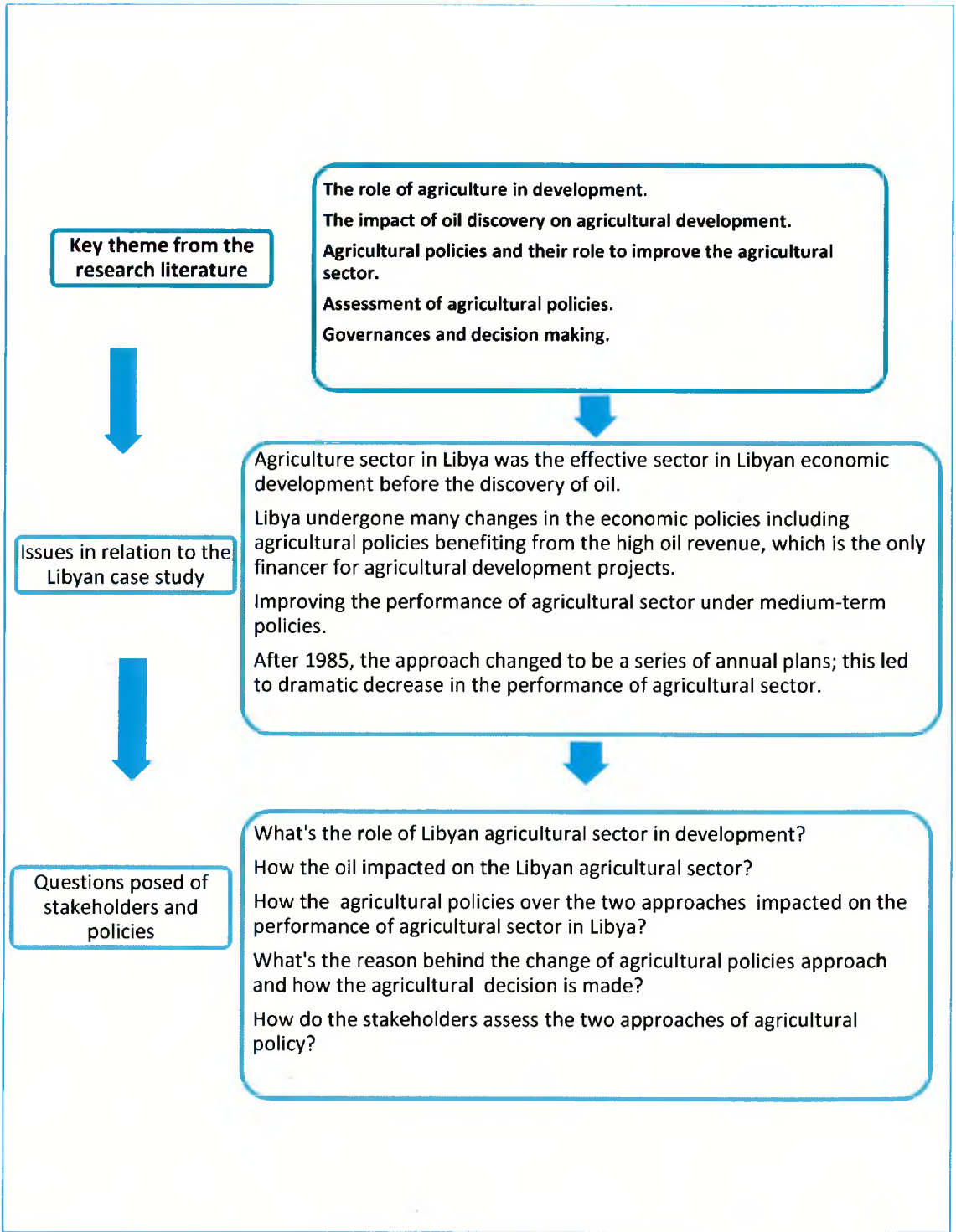


Figure 7.2 Key themes, related issues and questions

Policy formers (ministry/ government agency)

- The role of agriculture in development in Libya mainly depends on the nature and approach of agricultural policies.
- Over-relied on oil revenues to develop agricultural sector.
- The decline in oil global prices was the main reason to change the approach of agricultural planning policy from medium-term plans to annual plans.
- There were no clear guidelines for agricultural decision-making.
- There is a large communications gap between those responsible for agricultural decision-making and farmers.
- The absence of the private sector in agriculture.
- Agricultural policies under medium-term plans were more effective in terms of policy objectives achievement and performance of the sector.

Policy receivers & implementers (farmers)

- Agriculture sector under medium-term plans was more effective in development.
- The agricultural sector under medium-term plans was characterized by the presence of appropriate pricing, funding, support, subsidies policies.
- The state's interest under annual approach decreased dramatically to become negligible.
- Farmers have no idea about the process of decision making and did not involvement in any decision.
- Agricultural decisions at the farm level become dependent on the farmers themselves under the annual approach.
- The major drawbacks of agricultural policies in both approaches were the absence of the involvement of farmers in the process of decision making as well as the communication gap between farmers and those responsible for the sector.
- Agriculture is no longer profitable and prompted some to use the agricultural land in non-agricultural activities.
- Some of farmers engaged in agriculture for social or religious reasons.

Figure 7. 3 Critical assessment and analysis of the research findings

7.2 The role of agriculture in national development

This section addresses the first and second Research Objectives of this study. The first objective was to explore how, in an emerging economy, agricultural development relates to government policy. The second objective of the research was to examine agricultural development strategies and their effect on the Libyan agricultural sector. This was undertaken using a research approach that employs triangulation of data collection (i.e. interview, questionnaire and document analysis).

According to Johnston and Mellor (1961) and Schultz (1964), the role of agriculture in national development depends mainly on the context and the circumstances surrounding the sector. Analysing the impact of the Industrial Revolution on the agrarian sector in Libya, the role of agriculture within the wider economy was to enhance the adoption of science-based technology and led to overall national growth. Furthermore, economists have explicitly identified linkages between strong growth and the multiplier effects of agricultural growth and to the non-agricultural sectors (Johnston and Mellor, 1961; and Schultz, 1964).

Since 1982, in Libya, considerable changes have placed the agricultural sector in a different context in terms of the new role of markets, technological and institutional innovations. The new roles of the private sector and civil society are all signals of a new setting for agriculture. The World Bank (2012) indicated that up until 2009, there was a fall in the contribution of the agricultural sector to the world economies. This was especially marked in the oil-producing countries. In Libya, Saudi Arabia and Kuwait, it was noted that the agricultural sector no longer formed the centre of their respective economies, nor did it constitute the focus of decision makers' attention in those countries.

Relating the findings of research into Libyan agricultural policy to the above, 50% of policy makers interviewed supported the view that agriculture continues to play an important role in national development. They indicated that the agricultural sector plays a major role in employing a large proportion of the labour force and provides essential food commodities.

This view was supported by 90% of farmers interviewed. They considered that agriculture plays an important role within the broader economy. Nevertheless, while it had been an engine for development in the nineteen-seventies and nineteen-eighties, when a medium-term policy approach was adopted, its role decreased dramatically. Since that time, with a shift to annual policy plans, the importance of agriculture has lapsed.

Again, document analysis supported the findings of previous research that according to farmers, medium-term plans were better. They enabled increased

development and enhanced the agricultural sector contribution to the general development of the country.

The results of document analysis show a remarkable decline of all macroeconomic indicators during the period of annual plans. This was compared to the period where medium terms policies were applied.

The findings of this research support the view that agriculture has a vital role to play in the country's development. However, this is dependent on the policies in place. These findings to some degree concur with the observations made by Christopher *et al.* (2010) in the case of Nigeria where inefficiencies in the agricultural sector were attributed to underfunding and the poor implementation of agricultural policies.

However, these findings contradict views put forward by Diao *et al.* (2006) that agricultural conditions, natural resources and geographic location, rather than policies, are the factors responsible for agricultural growth. Other researchers such as Byerle, Diao and Jackson (2005), Brandt, Rawski and Lin (2005), Sonntag *et al.* (2005), and Huang and Rozelle (2008), noted that globalization, integrated value chains, rapid technological changes, environmental constraints and institutional innovation were the main factors influencing the role of agriculture in development.

Furthermore, Brandt, Rawski and Lin (2005), Sonntag *et al.* (2005), and Huang and Rozelle (2008), point out that the role played by agriculture may be enhanced by the rapid development of the non-agricultural sectors. This can be the case especially with the industrial sector. Institutional and structural change is also influential.

Thus, whilst the role of the agricultural sector in national development is important, the mechanics of strengthening this role differs from one country to another. This research found the nature and efficiency of agricultural policies to be an important factor in development. The study concurs that the type of agricultural policy approach adopted has a significant influence in shaping the role of agriculture within the wider economy. The implementation of medium-

term plans during the nineteen-seventies and nineteen-eighties strengthened the role of agriculture in development and improved the performance of the sector. After 1985, the agricultural sector ceased to be at the centre of interest for the Libyan State. Additionally, annual planning was adopted. This led to the deterioration of agriculture and diminished its role as engine for development.

7.3 The impact of changing agricultural policies on farm level performance

In Chapter Three, it was noted that literature on agriculture's historical development and agricultural policies in Libya is scarce. This study is one attempt that helps fill the gap. This section addresses the Second and Third Research Objectives. The second was to examine the key factors influencing the development of Libya's agricultural sector. The Third Objective was to study the changes and development in both macro policies and agricultural policies in Libya. According to the OECD (2008, p.12), agricultural policy is a set of procedures, methods and reforms that are adopted in the agricultural sector to achieve specific goals. Such policy is a way to organize and use economic resources to achieve the objectives of society, and in this case, of the agricultural sector. According to the Wilton Park Report (2008), *'Agriculture policies of national governments and the international community need to be consistent and long-term and enable robust and dependable markets to develop, policies need to recognise the reality of farming is critical at the national and international level'*. Ellis (1992) defines agricultural policy as that part of the state's economic policy, which is applied to the agricultural sector. This section seeks to establish how agricultural policies have affected agricultural performance at farm level.

Seventy percent of policy-makers indicated that during the period in which annual plans to agricultural policy was adopted, funding, financial support and pricing policies were not sufficient. They confirmed that this had a negative impact on performance at farm level. Referring to the fall in oil prices, they pointed out that oil was the only source of finance able to support and realise agricultural plans in Libya. Whilst the first policy approach was underway, i.e. the medium-term agricultural plans, it was to some extent possible to effectively enhance farmers' performances and meet their needs.

These findings support the views of the farmers, all of whom pointed out that when the medium-term plans were in place, funding, subsidy and pricing policy were very effective in enhancing agriculture at farm level. During this period the government provided 1) agricultural land; 2) machinery alongside support for agricultural inputs such as fertilizer, seed and pesticide at subsidized prices; 3) Farmers' Cooperative Societies responsible for providing such inputs; and 4) a pricing policy with government prices higher than market prices.

All farmers who responded to the research questionnaire pointed out that in the absence of those policies, during the second period, 1986-2007, annual plans forced farmers to shift to the cultivation of cash crops. Furthermore, these depended on the excessive use of chemical fertilizers. This view is also evidenced in the quote from one of the interviewees:

"agricultural production and cultivated areas have seen dramatic increase during the nineteen-seventies and nineteen-eighties (during the period of the three- and five-year plans) and led to improved financial situation and social status of farmers, farming became attractive and provided an adequate standard of living" (See Appendix C).

These research findings correspond with the GPCT (1996), El Messallati (2007), and the AOAD (1994) in terms of the importance of support, funding and subsidy policies in agricultural sector in Libya. The results also correspond with Abdulgader (2005), El Messallati (2007), and El Shiakhi (2009), with regard to the importance of pricing policies in medium-term approaches. These led to an increased production and area under cultivation. The findings indicated that 100% of farmers and 60% of decision-makers confirmed pricing policies had significant impacts on improving farm level production. They also increased the area under cultivation. In addition, the results of the document analysis indicated that grain crop cultivation covered 73.2% of the total cultivated area during the medium-term approach. This decreased to about 34.8% of the total area during the annual approach due to the absence of pricing plans and subsidy policies. In addition, self-sufficiency in cereal production reached an average of about 40% for the period of medium-term approach and decreased during the annual approach to about 35%. About 20% of the participants stated

that they have reduced their farm size due to the high cost of inputs. Also 40% of them said that *"agriculture is no longer a sustainable business but has become a 'traditional occupation'"* (See Appendix C).

On the other hand, the research findings do not correspond with AOAD (2008) and El Messallati (2007), both of whom stated that, during the annual approach, Libya implemented crop structure policies, which aimed to reduce differences in production costs between regions. However, and importantly, this was refuted by 96% of farmers who indicated that they chose cash crops to obtain the highest profit-margin and to secure an appropriate agricultural income, and they were even forced to use agricultural land for non-agricultural activities.

The results of the research show that there is no statistically significant relationship between the performance at farm level and agricultural policy during the present period of annual approach to policy development and implementation. Statistical analysis of the farmers' questionnaire shows that there is statistically significant, negative relationship between performance at farm level, State interest, and market condition (regression coefficients estimated as -0.376 and -1.384 respectively). There is also no statistically significant, positive relationship between the farm level performance, infrastructure, and cooperative society role (regression coefficients estimated as 0.221 and 0.143).

The findings of the document analysis support the above. It established that in contrast to the annual approach, the medium-term plan approaches were more effective in improving agricultural performance. Agricultural resources were developed and the contribution of the agricultural sector to the Libyan economy improved. With the removal of government support that came with the annual approach, the overall number of people employed by the agricultural sector in the economy fell from 20% 1985 to 5.2% in 2007. This, in turn, affected negatively the general contribution of the agricultural sector to GDP, reducing it to about 3%. Agricultural allocations also declined from 12.5% in 1985 to 1.6% 2007.

The analysis of documents also shows that the area of agricultural land used for seasonal crops has seen a statistically significant increase, amounting to about 4,290 hectares, which represents 0.24% of the annual average during the first approach. During the second approach, 1986-2007, the area of agricultural land used for seasonal crops saw a statistically significant decrease of about 9.53 hectares per year, representing about 0.53% of the annual average. This decrease may have been due to lack of attention paid to reclaimed land, i.e. left fallow for a number of years, as well as to a failure, after 1985, to adopt new plans for the reclamation and development of land, a failure that resulted in a lower annual growth rate for agricultural land. With regard to the permanent area of land under cultivation, there was a statistically significant increase in the first period, to 42.6 thousand hectares, which represented 0.75% of the annual average during the first approach. While in the second approach, 1986-2007, the area of agricultural land given over to permanent crops saw a statistically significant decrease, to about 3.66 thousand hectares per year, representing about 1.1 % of the annual average.

These findings are in complete accord with what has been mentioned by Krueger, Schiff, and Valdes (1991) and Binswanger and Deininger (1997), who stated that such supportive policies, or their absence, had an important role in shaping the success of small farms in Africa. The WB (2007a) and European Commission (2008) are also of the view that support; funding, subsidy and pricing policies (CAP) are considered a critical factor that influences the effectiveness of performance at farm level. The WB (2007a) and Brooks (2010), who consider the Asian context, have found that support and finance have a positive influence on small-scale farmers in Asian countries such as China. Compared with other countries of the world, farmers' productivity and the growth of the agricultural sector in the economies of these countries increased and poverty rates fell.

It can be argued that it was the change of policy approaches that led to the withdrawal of support, funding and subsidy policies. It has been demonstrated that these policies played a significant role during the medium-term plan approach, and led to the improved performance of the sector and improved

financial and social conditions for farmers. What necessitated this change in approach is the subject of the next section.

7.4 The effect of the oil sector on agricultural development

Until oil was discovered in the late 1950s, the Libyan economy depended mainly on the agricultural sector. It contributed more than 30% to the GDP and employed about 70% of the total labour force (El Azzabi, 1974). In addition, the agricultural sector provided raw materials for the manufacturing sector. At that time, Libya was classified as one of the poorest countries in the world (World Bank, 2011b).

High oil revenues provided an appropriate environment for the financing of all development projects, including agriculture, especially during the 1970s when 80% of state revenue came from oil (El Messallati, 2007). In the early 1980s, oil prices began to decline; this had a significant impact on the Libyan economy. The sharpest decline of oil prices, in 1985, forced the Libyan government to reduce its overall spending. This, in turn, influenced the quantity of goods imported and led to consequent problems in the repayment of debts (Alfitouri, 2004).

The findings of the survey indicate that 60% of policy makers identified the reason for change in the approach to agricultural policy as financial and traced it to the drop in oil revenues in the middle of the 1980s. They noted that the oil sector is the only source of finance for all other sectors, including agriculture; and that the sharp drop in oil prices led to a decrease in development allocations.

The negative impact of the drop in oil revenues on the agricultural sector mentioned by policy makers was supported in the findings of studies conducted among farmers. Seventy percent of all farmers attribute the fall in agricultural production to the oil sector. Again, these findings are consistent with the findings of document analysis in chapter five which showed that high oil revenues provided an appropriate environment for the financing of all development projects, including agriculture, especially during the nineteen-seventies and early nineteen-eighties. The documents revealed that 80% of

state revenue came from oil but in the middle of the 1980s, when oil prices began to decline it had a significant effect on the Libyan economy. In addition, the findings show that before the discovery of oil, the agricultural sector constituted about 30% of GDP and 70% of the total labour force. However, after the discovery of oil, these figures fell in 2007 to about 3% and 5.2% respectively. These figures need be read against oil sector output: it contributed about 70% of the GDP in 2007; and oil exports represented about 95% of Libya's total exports.

Furthermore, the research indicates that Libya is a net importer of agricultural commodities and its trade balance has been in deficit throughout the whole period covered by this study. Despite the government's effort to develop food exports, results show that the percentage of coverage rate is very low and close to zero.

The findings of this research correspond with the views of Ammani's (2011) and Omeje's (2006) on the role of oil in the creation and installation of a dictatorship regime that controlled oil revenue. In the Libyan context, Al-Gadafi and his family captured, controlled and drained off the Libyan oil capital for over 42 years, and left the country suffering from the consequences. In addition, the findings of this research is in line with that of Barnett and Ossowski (2003) who point to the difficulty involved in the prediction of global oil prices and the flow of revenue, which has caused an imbalance in the economies of oil-producing countries. In Libya, oil revenues are the main source of finance for development projects and policies, and using the forecast method to estimate its prices can lead to serious damage to the improvement of non-oil sectors, including agriculture.

The research findings however do not correspond with the views of researchers such as Ammani (2011), Stevens (2003), Martin and Subramanian (2003), Gylfason (2006), Atsushi (2007), and McPhail (2008), in terms of the impact of oil on the exchange rate. The researchers argues that the non-oil sectors in Libya are not effective, and that the highest contribution to GDP comes from the service sector, and this is barely 5%; whilst the oil sector's contribution, represents about 70%.

In summary, even though the oil sector led to the migration of labour away from the agricultural sector and affected its development negatively, it was the only source of finance for development projects in Libya including providing financing for the agricultural sector. The development of the agricultural sector was thus linked to the performance of the oil sector and the drop in global oil prices in the nineteen-eighties led to changes in approaches to agricultural policy and the reduction of financial support for successive agricultural development plans.

7.5 Agricultural decision-making Mechanism

According to Swinnen (2010), agricultural policy suffers from distortions relating to the decision-making mechanism. Interest group frameworks have been at the cornerstone of most political economy approaches' to policy decision-making (Birner and Resnick, 2010). From the above, policy approach followed by some groups might not be consistent with the objectives of economic policy.

The findings of this research have indicated that in Libya 50% of policy-makers claim their decisions on matters affecting the agricultural sector are based on available data, which is scanty, difficult to gather and not very reliable. 25% of agricultural policy makers maintain that they take decisions based on their experience; and the other 25% indicate that the decisions they take are a response to instructions from higher-ranking government officials. 80% of respondents stated that the process of decision-making was made problematic and challenging because of confusion about, and overlap of, official authority. This is because there is no clear indication about who is responsible for what in decision making about the agricultural sector; nor is there a transparent, unequivocal mechanism of policy making. His challenge is compounded by the fact that in Libya documents and information about the decision-making mechanism are very scarce; this is probably due to the sensitive relationship between agricultural policy and public policy.

Due to a communication gap between farmers and government officials, which was identified by 100% of farmers, farmers have no idea about the mechanism governing the decision-making process. All policy makers interviewed and 96% of farmer questionnaire respondents stated that they were not consulted in decision-making processes that affected the agricultural sector.

The interviewees also stated that *"We did not participate in or even discuss any decision or agricultural policy that has been applied and we do not have any idea on how decisions that affects our livelihood were arrived at. The communication gap between farmers and the officials of the sector is very large"*. (See, Appendix C).

These findings correspond with what has been suggested by the World Bank (2011a), Dyer, Boucher and Taylor (2006) and Narayan (2009) in terms of the participation of farmers in the decision making process. 100% of farmers believe that their absence from the decision making process is a major problem. Swinnen (2010), and Birner and Resnick (2010), maintain that the nature of the political regime influences decision-making processes and can cause significant distortions. This is alluded to by 25% of decision makers, as some decisions are arrived at and passed down by higher authorities, and not discussed by the decision-making commissions, while 80% of them believe that the overlap of responsibilities among authorities is one of the greatest challenges facing the decision making process in the agricultural sector in Libya.

The FAO (2004a), the WB (2008), Van Donge, Henley and Lewis (2012) noted that the level of farmers' education and their experience was a factor that impacted on their engagement in the decision making process and their empowerment. Furthermore, their engagement and empowerment is also shaped by the fact that they are not the sole stakeholders in the sector. Other stakeholders are sector officials, local and international institutions and organizations, the private sector, companies and civil society. Unlike Jamison and Lau (1982), Rogers (2003) states that the poor education of farmers could be the main factor influencing the level of farmers' contribution to the decision making process. However, this claim is not consistent with the research findings that found that 66% of farmers are educated and 60% of them have more than 30 years' experience. Thus their involvement can help shape policies in the sector.

From the above, the absence of a clear mechanism for decision-making and the non-participation of farmers in this process are important contributory factors to ineffective policy implementation. This has led to a growing gap between the

state and farmers. Also, overlap and confusion about who is responsible for the making process are challenges that negatively affect agricultural decision-making process in Libya.

7.6 Stakeholder evaluation of agricultural policies

This section is on Research Objectives 3 and 4, namely: to evaluate agricultural policies from the perspective of farmers; and to evaluate agricultural policies from the perspective of agricultural decision-makers.

Since 1973, the Libyan authorities have implemented two main approaches to agricultural policy. Policies from 1973 to 1985 were of a medium-term nature (three to five years) and those introduced from 1986 to 2007, were annual plans (drawn up year by year). These two policy approaches impacted differently on the performance of the agricultural sector in Libya (GPCT, 1993; El Messallati, 2007 and El Shiakhi, 2009).

The findings of the policy maker survey indicated that 55% of policy makers believe that the annual approach does not promote agricultural development. In addition, 70% of policy makers pointed out that the annual approach is unable to support the agricultural sector and does not meet farmers' needs. All respondents (100%) of policy makers identified the main drawbacks of the annual approach to be the absence of funding, support and subsidies policies. These findings correspond with the findings of the farmers' survey. All respondents who are farmers, (100%), indicated that ineffective agricultural policies on pricing, marketing, financing and subsidy resulting from the annual approach, had a negative impact on their farm's performance. The majority of participants stated that, in recent years, there has not been any clear policy; instead they were using their personal skills at the farm level. The goal of farmers was to make profit and have resorted to excessive use of fertilizer to achieve this to the detriment of the environment. The farmers confirmed that policies on crop structure were completely absent during the annual approach. The findings indicated that 78% of participants choose crops according to their expected profit margin. This is confirmed by the fact that no farm depended solely on organic fertilisers: all farms relied on chemical fertilizers to maximise

their production. This was also corroborated by the production equation at farm level, which more than any other factor depended on fertiliser.

The correlation coefficient between fertiliser use and crop production is positive and high, amounting to 0.63, while the correlation coefficient between agricultural policy and production is negative and weak, only -0.03. In addition, 85% of farmers stated that the current agricultural policies lack a well-established infrastructure and sufficient market conditions. Furthermore, 84% pointed to the absence of cooperative societies and private sectors' role as drawbacks. Moreover, 76% stated that during the annual approach, there was increase in funds from the state to other profitable sectors at the expense of agricultural sector.

The interviewees also stated that "*The impact of annual agricultural plans in Libya is negligible*" (see Appendix C).

Again, statistical analysis of the farmers' questionnaire shows the relationship between the performance at the farm level and some variables related to agricultural policies is very low, and the results showed that there is no statistically significant relationship between the performance at farm level and agricultural policy.

These findings are consistent with the findings of documents analysed which show that the agricultural labour force fell to about 5.2% during annual plans, while it had amounted to 20% in 1985. In addition, agricultural investment fell from 18.4% of total investments over the period 1973-1985 to about 7.6% during the annual approach. The contribution of agriculture to the GDP declined from about 7% under the medium-term plans to about 2.5% under the annual approach. Furthermore, the Cobb Douglass function as shown in Sections 5.7.9 and 5.7.10 was characterized by decreased return to scale during the annual approach while it was characterized by an increased return to scale during the medium-term approach. There was also an increase in the imports bill under the annual policy approach.

The stakeholder evaluation shows that the annual approach to policy implementation and formulation does not support the agricultural sector, and does not meet the needs of farmers. The need for long-term plans together with adequate funding for these plans, are important factors for sustainable agricultural development. Under annual plans, marked by the absence of state attention, the Libyan agricultural sector showed an inefficient use of scarce agricultural resources such as land and water, which caused financial and environmental problems.

7.7 Chapter summary

From the above, ineffective agricultural policies have presented agriculture in Libya as an unattractive career both economically and socially. Farmers have to contend with a high cost of agricultural production in return for low revenues, which affects their standard of living. Coupled with this, there is a noticeable gap between farmers and officials responsible for the agricultural sector, which does not encourage the participation of farmers in decision-making. In addition, the majority of decision makers have suggested that the lack of active co-ordination and co-operation between official bodies is a major problem. This shows that all stakeholders in the agricultural sector have similar perspectives on the development of this sector. The structures and processes used in the appointment of agricultural sector representatives, such as social and tribal relations, also play an important role in the selection of government representatives. These representatives most often have no knowledge about the most basic requirements of the agricultural sector and the needs of farmers. The lack of qualified and experienced representatives impacts negatively on farmers and agricultural development in Libya. The quality of government representatives in the agricultural sector is an important factor in shaping the development of agriculture in Libya.

It can be deduced from the research that other factors such as financial returns, religious and cultural motivation influence farmers to undertake agricultural activities. The research results have indicated that agriculture is no longer a lucrative career because it is unable to provide sufficient income compared to other economic activities. Nevertheless, farmers see this career as an honourable profession as it has a great history in the Islamic religion. “*The*

prophet Mohammed (peace be upon him) worked as a shepherd grazing his herds, and there are many verses in the Quran and authentic hadith that encourage action on agriculture, which indicate the relation and benefit to human life" (See Appendix C). Thus, religion and culture play a very important role in agriculture and reflect on the performance of the farmers and the sector as a whole; these should be given serious consideration in the development of policies for the agricultural sector.

In the final chapter, conclusions and recommendations are drawn from the research findings and on how changing agricultural policies impact on Libyan agricultural performance. The chapter will also make recommendations for further research that needs to be undertaken to ensure the effective formulation and implementation of agricultural policy for the development of Libya's agricultural sector.

CHAPTER EIGHT: CONCLUSIONS AND RECOMMENDATION

8.0 Introduction

Libya is one of the most important oil-producing countries in the world; the growth of its agricultural sector is heavily dependent oil revenue (Ham, 2002). In the nineteen-seventies and the nineteen-eighties, the Libyan government sought to develop strategies to promote agriculture through a set of plans (i.e. Three-year Plan (1973-1975), Five-year Plan (1976-1980) and Five-year Plan (1981-1986) (GPC, 1999). However, at the beginning of the nineteen-nineties, there was a change from strategic medium-term programmes and plans to a series of annual policies. Despite this change in agricultural policy durations, previous studies have largely failed to register the impact that this change in approach had on the performance of the agricultural sector. This research was to fill this gap in literature.

This final chapter of the research aims to draw conclusions and suggest recommendations for the development of agricultural policy formulation and implementation in Libya. It also makes proposals for further research into how agricultural development is affected by agricultural policies. The main aim of this study, as set out in Chapter One, was to investigate the impact of changing approaches to agricultural policy on Libyan agricultural performance. This study evaluated the performance of the agricultural sector during the period where two approaches were implemented. The study discussed some previous studies that addressed the issues of agricultural development in general. How specific agricultural policies have developed and how constraints resulting from policy have been dealt with.

The researcher discussed the experiences of oil-producing countries, especially Arab oil countries, which rely on oil revenues for development projects, as is the case in Libya, and touched on the phenomenon of the Dutch Disease and its effects especially on agricultural development. The mixed methodology used was discussed in detail in Chapter Four, and the results of documentary analysis were presented in Chapter Five. The findings of the questionnaire and interviews were presented in Chapter Six and discussed in Chapter Seven.

The research argues that policy formulation and implementation are key factors that affect the development of agriculture in Libya. It also maintains that the rampant changes in agricultural policies impacted negatively on the agricultural sector in Libya. This is in line with the Wilton Park Report (2008), which stated that *'Agricultural policies of national governments and the international community need to be consistent and long-term and enable robust and dependable markets to develop, policies need to recognise the reality of farming is critical at the national and international level'* (p.12).

The World Bank (2008) noted that the emerging new model of agriculture is led by private entrepreneurs in extensive value chains that link producers to consumers. This includes many entrepreneurial smallholders supported by farmers' organizations. To consolidate and develop private entrepreneurial involvement in the agricultural sector, the Libyan government needs actively to encourage such interest groups through the development and efficient implementation of appropriate policies. The formulation and implementation of appropriate agricultural policies should take into account the role of farmers. The effect these policies on farmers should be factored into policy formulation and implementation to enhance the development of agriculture in Libya.

8.1 Conclusion

Oil revenues are the main sources of finance for all other sectors in Libya, including agriculture, hence the sharp drop in oil prices in the early nineteen-eighties led to decrease in development fund allocations to the detriment of sector.

Agriculture plays a vital role in the socio-economic development of Libya. This stems from the fact that the agricultural sector in Libya employs a large number of workers and provides the population with essential food commodities, food security and self-sufficiency.

Two main types of agricultural policy regimes were implemented in Libya between 1973 and 2007. Agricultural policies from 1973 to 1985 were of a medium term nature (three to five years) while those from 1986 to 2007 were annual. Both policy approaches impacted differently on the performance of the

agricultural sector in Libya. Whilst generally, the medium term approach contributed significantly to the development of agriculture, the annual approach, from the perspective of majority of stakeholders has had many challenges that are hampering the development of agriculture.

Agricultural policies from 1973 to 1985 were more effective than those that were operational from 1986 to 2007. This was because of the support initially provided to the sector by the government during 1973-1985. Sufficient funding from government had a significant influence on the level of policy effectiveness and efficiency.

On the other hand, the findings show that recent agricultural policies have not been as efficient as anticipated and do not lead to better development in the sector as they do not meet farmers' needs.

The literature shows that for agricultural policies to have meaningful impact, they should enhance marketing conditions, provision of loans, seed and fertilizer and appropriate guidelines and facilities for imports and exports for small farmers. The research noted that such issues were not critically considered during in the period when annual policy plans were implemented in Libya.

The research also concludes that the private sector can play an effective role in the promotion of agriculture if integrated into policy formulation. As it stands now, they contribute very little to policy formulation and this contributes to the poor performance of the agricultural sector. There was general agreement among the private sector that the economic and political climate in Libya is not as conducive as it should be to enable better investment. This has contributed to the slow development experienced by the sector.

Developing policies that will enhance the social and economic status of farmers and promote agricultural development should be the focus of government. The government needs to raise awareness among farmers and manage their expectations in terms of the support farmers expect from the government. The research shows that government support to the agricultural sector from 1973 to

1985 played a critical role in the promotion of agriculture in Libya. Agricultural support systems such pricing incentives, provision of inputs at subsidized prices and the involvement of farmers in policy formulation are vital for the development of agriculture in Libya. Both farmers and policy makers recognised the important role policy plays in the promotion of agricultural development in Libya and how an improved relationship between farmers and agricultural policy makers will impact positively on agricultural development.

From the above, two main reasons can be considered responsible for the current poor state of the agricultural sector in Libya. These are:

- Changing agricultural policy approach from medium-term plans to annual plans which has impacted negatively on the performance of Libyan agricultural sector and the
- Low level of farmer consultation and involvement in the process of decision-making.

8.2 Contribution of the thesis to knowledge

The contributions of this research can be viewed from several different perspectives. First, this research identified that the nature and efficiency of agricultural policies is an important factor in development of the sector. The research concurs that the type of agricultural policy approach adopted has a significant influence in shaping the role of agriculture within the wider economy. The research also emphasized on the impact of oil price fluctuation on the nature of and the approach of agricultural policy formulation and Implementation in Libya.

Contrary to what the literature mentions about oil resource discovery and the Dutch disease, the discovery of oil in Libya impacted differently on its economic sectors. The research demonstrated that the Dutch Disease could affect other sectors of the economy negatively, but until recently in Libya, these sectors had not experienced such effects. The discovery of oil actually impacted positively on agricultural development. However, the development depended on policies, which in turn led to different outcomes regarding the performance of the agricultural sector.

The research enhances the understanding of changing agricultural policies and agricultural development in Libya. It provides new perspectives to agricultural development in oil rich countries.

At present, there is a deficit of both Arabic and English language literature on the impact of Libyan agricultural policies and this study bridges part of this gap. It does this by examining agricultural policies and how they impact on the performance of the sector. The research builds on knowledge about agricultural policies in Libya and their importance and thus contributes to increasing the focus on issues related to policy formulation and implementation and their effects on agriculture in Libya. The research develops an informed view on changing agricultural policies and the development of agriculture in Libya and raises awareness of the technical challenges farmers face in relation to agricultural policy formulation and implementation.

The research also provides an in-depth study of the factors that relate to the impact of policy on agricultural performance. The research used an innovative approach to gather information from policy documents, a sample of farmers and policy makers. Such an approach gives an innovative approach to researching the effects of changing agricultural policies on development of the sector. The researcher collected data using three different methods (interviews, questionnaire and document analysis). The document analysis enabled an understanding of the historical development of agricultural policy and issues generated by the impact of changing agricultural policies on agricultural performance.

Compared with other studies of agriculture in Libya, the triangulation of data in this research is an innovative approach that relies upon gathering information from multiple sources and over two different periods (1973-1985 and 1986-2007) in the Libyan context. In addition, this study may be considered the first attempt to use a stakeholder analysis approach as a means of identifying the impact of agricultural policies in Libya.

The main contributory value of this research is that it provides, for the first time, an in-depth understanding of how changing policies impact on the performance

of the agricultural sector in Libya. This was achieved by drawing attention to the consideration of the impact of policy changes on agricultural sector development. The research generates findings that are transferable to other developing countries, especially those in Northern Africa, with economies similar to that of Libya. It provides an opportunity for further research on other internal and external factors and their possible impacts on policy and agricultural development especially in oil producing countries in Africa.

8.3 Recommendations

After careful review of literature on agricultural policies and agricultural performance, and analysis of research data, the following recommendations are made on how the agricultural sector can benefit from effective policy formulation and implementation.

1. There should be a clear and deliberate mechanism of agricultural decision-making; this would contribute to the success of the sector. The role of farmers in decision-making should be normalised and farmers made to contribute to policy formulation. This requires a closer collaboration between all stakeholders in the agricultural sector on matters that relate to policy formulation and implementation.

The World Bank (2011a), Dyer, Boucher and Taylor (2006) and Narayan (2009), encourage the participation of farmers in the decision making process for effective development of the sector. Swinnen (2010), and Birner and Resnick (2010) noted that the nature of the political regime influenced the decision-making process and can cause significant distortions. This recommendation applies to nations that want to develop their agricultural sector effectively.

2. Effective coordination between public policies and economic policies, including agricultural policies is recommended since this will impact significantly on ensuring the realization of the objectives of agricultural policies. WB (2007a) and Brooks (2010) have noted that the productivities of agricultural labour and land through support policies impacted significantly on the agricultural sector in Asian countries. This can also be true for Libya if social and economic policies are integrated and agricultural policy focus extended to related sectors such as the

provision of infrastructure and public services (See, Wilfred and Edwige, 2004). This recommendation is applicable to Libya as well as other countries that want to develop agriculture effectively.

3. The agricultural sector plays a more important role than other sectors through the provision of food, which makes it imperative to give the agricultural sector more attention than other sectors, regardless of its contribution to GDP. Whilst this recommendation may be specific to Libya, other countries may have their own priorities.
4. The need to involve stakeholders in the assessment of agricultural policies as well as the need for their engagement and empowerment in decision-making processes is recommended for the effective development of agriculture in Libya. The participation of stakeholders increases the possibilities for smallholder farmers and the rural poor to raise their political voice thus promoting social cohesion. It has been noted by Birner and Resnick (2010) that the voices of all stakeholders should be heard for effective development. The approach of engaging stakeholders in policy formulation has gained significance due to the importance of farmers in agricultural policy, especially in developing countries. This was confirmed by Eliasi, Aubin and Sunga (2009, and Lundberg (2005), who note that, in many cases, decision makers and stakeholders are unaware of the magnitudes and distribution of potential reform impacts. Hence they overlook the importance of the stakeholder engagement.
5. Government support for the agricultural sector in the area of subsidies and marketing should be reintroduced due to the positive impact these had during the 1973-1985 period. This recommendation is specific to the Libyan context and may not apply to other countries. However, subsidies if well managed can promote the development of agriculture in most countries. The World Bank (2007a) and Brooks (2010) stated that the productivities of the agricultural sector could improve significantly through subsidies and support policies.

6. Monitoring and following up the implementation of agricultural policies was one of the main challenges that have plagued the development of agriculture in Libya during both periods. The research found that the weak supervision, monitoring and evaluation of policies led to increased costs of agricultural inputs that burdened the state budget. Monitoring the agricultural policies and supporting policymaking requires analysing the relationship with the performance of farms (Poppe and van Meijl, 2004). This is a recommendation that may apply to Libya and other countries that have weak policy monitoring systems.
7. Activating the role of cooperative societies and improving the channels of communication between farmers and those responsible for the agricultural sector will benefit the development of the sector. in Libya
8. Religion and culture play a very important role in agriculture and reflect on the performance of the farmers and the sector as a whole. These factors should be given serious consideration in the development of policies for the agricultural sector in Libya. Government should take advantage of farmer's religious and cultural motivation and their belief in the importance of work in agriculture and make the most of this motivation as much as possible to raise the interest of farmers and improve their performance at farm level. The research indicates that agriculture is no longer a lucrative career because it is unable to provide sufficient income compared to other economic activities. Nevertheless, farmers see this career as an honourable profession as it has a great history in the Islamic religion: The prophet Mohammed (peace be upon him) worked as a shepherd grazing herds, and there are many verses in the Quran and authentic hadith that encourage engagement in agriculture, which indicate its relation and benefit to human life.
9. It is recommended that the government of Libya should acknowledgement and improves the role of the private sector by encouraging them to play a key part in contributing to the economic environment of the Libya. Agriculture is an important source of economic growth through its contribution to the national economy and provides

investment opportunities for the private sector (Christiansen, Demery and Kuhl, 2010). The participation of the private sector in agriculture increases the possibilities for smallholder farmers and the rural poor to raise their political voice and contribute to policy development (World Bank, 2008). Van Donge, Henley and Lewis, (2012), note that the state has a role in market development, providing core public goods and improving the investment climate for the private sector. Thus, strengthening the capacity of the private sector and partnering them is important for agriculture development.

10. The researcher recommends that the government should give more consideration to the need for state intervention in the production and marketing of particular agricultural commodities in which Libya has a comparative advantage and where demand in foreign markets exists, for example, dates, olive oil and fish, A report from European Commission DG Trade (2009) indicated that 'there are opportunities for the EC to provide technical assistance to Libyan producers towards increasing production standards to facilitate entry of Libyan goods like olive oil, dates, and tuna into European market.

11. The new government should pay more attention to the oil issue, and learn from the experiences of countries that have avoided the Dutch disease or resource curse.

8.4 Further research

In view of the Arab Spring and its implications for Libya, there is a need for the development of an appropriate policy framework and the adoption of new economic and agricultural policies that are in tandem with current conditions and give opportunity for new ideas for the development of the agricultural sector in Libya.

Further research to extend this study on the impact of policy on agricultural development in Libya is necessary to understand the linkages between policy and its effects on national development especially in the agricultural sector. This could be achieved by undertaking in depth interviews with farmers to

understand their concerns on policy formulation and implementation and how it affects them. Such in depth interview can also be done in other agricultural regions in Libya to determine whether the finding of this research can be generalised across Libya. This will provide further detailed information on the effect of policy changes on the development of agriculture in Libya. Further research should be undertaken to discover why government official are reluctant to engage stakeholders in decision-making.

Again, further research is need on what capacities of farmers needs to be improved to make them meaningful contributors to policy formulation. The research sample in further research should be broadened to capture all stakeholders in agriculture including funding bodies.

This study was on only one region in Libya. Further research could be done on other regions to draw out issues that will encourage comparative analysis of results.

In conclusion, the use of mix methods approach in this research has helped to bring understanding to the important effects of the impact of changing agricultural policies on agricultural development in Libya. It revealed several factors such as single source of funding and its effects on agricultural development when such funding source is not immune to market pressures. The role of culture, religion and politics were also shown to be critical in agricultural development in Libya. The research has shown the important role of policy formulation and implementation and how it impacts on agricultural development in Libya and how it contributes to social and economic development of Libya. At present, agricultural sector activity and the contribution it makes to the economy is masked by the oil sector. Agricultural sector activity frequently appears less important than it is in reality because of the magnitude of the oil revenue. Accordingly, further studies of the agricultural sector should focus on its performance and contribution in relation to the non-oil GDP.

Whilst government interventions were useful, their effectiveness were limited by the absence of effective supervision, lack of technical labour, limited agricultural resources and fluctuations in rainfall, desertification as well as insufficient financial resources. Further research will be needed to provide useful insights

into how these factors can be mitigated through appropriate policies to promote effective development of agriculture in Libya.

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APPENDICES

Appendix A: Questionnaires

Policy Maker Questionnaire

Dear policy makers

My name is **Khaled Allafi**. I am PhD student at Sheffield Hallam University, Faculty of Development and Society.

I am doing a field study about agricultural policy in Libya. This part is a practical framework of the PhD thesis. I am doing a field study about the opinions and positions of agricultural policy -makers in Libya. This is a part of practical framework of the PhD thesis. I would like you to answer these questions. All answers will be confidential and will be disposed of immediately after the analysis. Please choose the answer that is identical to your opinion, I know that answers to this questionnaire will benefit the agricultural sector particularly and Libya in generally.

If you have any questions, please ask me when you return your questionnaire.

Yours sincerely

Khaled Allafi

Personal Information

(I)-Sex? 1- Male () Female ()

(2)-Age? 18-30 () 31-50 () > 51 ()

(3)Qualifications

Qualifications	
1- Primary certificate	()
3-Secondary certificate	()
4- Bachelor's degree	()
5- Master and PhD degree	()
6- Other , please specify	

(4)Place of Work

General People's Committee for Agriculture and Livestock ()

People's Committee of the Secretariat of Agriculture (region () Please specify.....

Other _____ Please specify _____

(5) Nature of work

Nature of work	
Secretary of the People's Committee	()
Head of Agricultural Area.	()
Head of Division.	()
Consultant.	()
Other	()

(6) Years of experience in agricultural field? () years

General Questions about the Agricultural Sector

(7) To what extent do you think that agriculture in Libya has an important role in the process of economic development?

I-very important () 2- important () 3- Fairly important () 4-Not important () 5- Not important at all ()

8) What is your opinion in these statements as regarding to agricultural policies in Libya?

	Statement	strongly agree	Agree	fairly agree	disagree	strongly disagree
1	Agricultural policies are not suitable for our country.					
2	These policies do not meet the real needs of the farmers					
3	Funding is not sufficient for the implementation of agricultural policies					
4	Official bodies are incapable.					
5	The role of the private sector is important in the development of the agricultural sector					
6	Reduce intervention of the government in economic activity					

Other: Please specify

.....
.....

9) In your experience in the agricultural field, what are the most important obstacles standing in

Constraints	
Natural constraints (Climate - land - water ... etc.)	
Constraints related to marketing	
Constraints related to financing	
The weakness of agricultural policies	
Poor infrastructure for economic activities (roads, ports... etc.)	
Constraints related to the use of modern technology	
Weakness of the administrative organs which are responsible for the agricultural sector	

the way of development of the agricultural sector in Libya?

Other, Please specify

.....
.....

General Questions about the Agricultural Policies

(10) To what extent do you think that the agricultural policies are good enough for agriculture sector?

1- More than sufficient () 2- sufficient () 3- Fairly sufficient () 4- insufficient ()
5- Extremely insufficient ()

(11) In your opinion, which policy should be given more importance or priority?

1- Subsidy () 2- Marketing () 3- Both () Other ()

(12) How do you evaluate the agricultural policy of Libya?

1-Very successful () 2-Successful () 3-Needs improvement () 4-Not successful ()

(13- If the policies are not successful, the reason can be traced to ;

the reason	
1- farmers have not benefited from agricultural policies	
2- large areas of land have not been brought under cultivation	
3- Progress in the area of irrigation, soil testing, mechanization and marketing is very slow.	
4- The agricultural sector is not given much importance hence funding is insufficient	
5- Advisory and extension services are inactive bodies.	
6- Farmers are not willing to accept advice and suggestions regarding better methods of farming and marketing.	

7- Any other reason, specify?

.....
.....

(14)Libya has followed two different approaches to agricultural policy. Which approach do you think is more suitable?

Plans and programmes (medium term) () Annual plans ()

(15)To what extent do you agree changing the approach of the agricultural policy to annual plans and programs?

1- Strongly agree () 2- Agree () 3- To some extent ()
4- Do not agree () 5- Do not agree at all ()

(16)What do you think is the reason behind the change of approach?

1-Financial () 2-Physical () 3- Political () Other ()

(17)If your answer is other, please specify?

.....
.....

(18)Do you think that a change of approach led to the development of the performance of the agricultural sector?

1- Very agree) 2- Agree () 3- To some extent () 4- Disagree () 5- very disagree

(19a) How effective do you feel agricultural policies between 1973- 1985 achieved the following objectives

	The Objective	1973/1985				
1-	Preserve and protect the natural resources while exploiting them in the ideal ways.	VE	E	FE	NE	NE at all
2-	To achieve self-sufficiency of agricultural products					
3-	Development of laws and agricultural legislation					
4-	The application of modern technological means					
5-	Organise the agricultural marketing on the agricultural zone's level.					
6-	Increasing proportion of the agricultural sector contribution in to the national income.					

VE (very effective) E (effective) FE (fairly effective) NE (Not effective) NE at all Not effective at all

(19 b)How effective do you feel agricultural policies between 1986- 2007 achieved the following objectives

	The objective	1986/2007				
1-	Preserve and protect the natural resources while exploiting them in the ideal ways.	VE	E	FE	NE	NE at all
2-	To achieve self-sufficiency of agricultural products					
3-	Development of laws and agricultural legislation					
4-	The application of modern technological means					
5-	Organise the agricultural marketing on the agricultural zone's level.					
6-	Increasing proportion of the agricultural sector contribution in to the national income.					

VE (very effective) E (effective) FE (fairly effective) NE (Not effective) NE at all Not effective at all

(20) To what extent do these issues affect agricultural policies?

	Statement	VB	B	FB	NB	NB at all
1-	The duality and overlapping of the authority of official award.					
2-	Lack of active co-ordination and co-operation between official bodies					
3-	The adoption of un-integrated agricultural plans and policies					
4-	The adoption of un-integrated agricultural plans and policies					
5-	The un-equal subsidy policies in the state which do not meet small farmers' needs.					

VB very big problem **B** Big problem **FB** fairly problem **NB** not problem **NB at all** Not problem at all

.....

.....

.....

1- Strongly agree 2-Agree 3- to some extent 4- disagree 5- Strongly disagree

1- Very Effective 2- Effective 3-Fairly effective 4 - Not effective 5- Not effective at all

.....

.....

.....

.....

1- Very important 2- Important 3-Fairly important 4-Not important 5- Not at all

mechanism of decision making	()
1- according to available data.	()
2- after consulting officials.	()
3- according to instructions from top	()
4- after discussions with farmers and field workers	()
5- As advised by developed countries.	()
6- trial and error method	()
7- based on our experience	()

1- Objective and considered
2- Extemporaneous in crisis time. ()
3- In the processing and developing stage. ()
4- Obscure and unclear. ()

(26) How significant are any of the following factors constraining agricultural policies implementation?

	Factors	VS	S	FS	NS	NS at all
1	A climatic reason related to the temperature and wends.					
2	Physical reasons related to the soil and its fertility.					
3	Biological reasons concerning insects and plant disease.					
4	Water and its resources availability.					
5	The followed irrigation technique.					
6	Absence of agricultural information, extension services and guidance.					
7	The absence of food industries.					
8	The absence of the human capability in the government agricultural institutions.					
9	Lack of agricultural planning					
10	The absence of good roads in the agricultural regions.					
11	Subsidy policy for the farmers.					
12	The size of farms.					
13	Absence of government marketing institutions on the all agricultural regions levels.					
14	The challenges from imported crops.					
15	Lack of agricultural research					
16	The weak contribution of private sector to the agriculture.					
17	The absence of co-operation and co-ordination between government bodies.					
18	The absence of agricultural regulations which organise the export of both chemical and natural fertilisers.					
19	The absence of control systems and follow-up in the government bodies					
20	Weakness of agricultural finance					

VS Very significant - S Significant - FS Fairly significant - NS Not significant - NS at all not significant at all

(27) If the agricultural policies need improvement can you give your suggestions?

.....
.....
.....
.....
.....

Thanks for participating

Questionnaire: Arabic Version

استمارة الاستبيان المقدمة الى اعضاء لجنة صنع القرار الزراعي

عزيزي صانع القرار

في المملكة المتحدة . انا خالد عبدالعاطي موسى اللافي طالب دكتوراة في جامعة شيفيلد هالم
اقوم بدراسة ميدانية حول السياسة الزراعية في ليبيا. هذا الجزء هو الإطار العملي لأطروحة الدكتوراه. وارغب في تقييم
السياسات الزراعية في ليبيا من وجه نظر صانعي السياسات الزراعية وسأكون سعيدا للإجابة على هذه الأسئلة، وأريد أن
أذكرك أن جميع الأجوبة ستكون سرية، وسوف يتم التخلص منها مباشرة بعد تحليل والمناقشة، لذلك ، أطلب منك أن تجيب
على الاسئلة التي تعتقد انها مطابقة لرايك ، وأنا أعلم أن الإجابة على هذا الاستبيان وسوف تعود بالنفع على القطاع
الزراعي بشكل خاص وعلى ليبيا بشكل عام .

إذا كانت هناك أي سؤال غير واضح من فضلك لا تتردد في السؤال عند تسليم الاستبيان

تفضلوا بقبول فائق الاحترام
خالد عبد العاطي موسى اللافي

أولا : معلومات شخصية

- 1- الجنس ذكر () أنثى ()
 2- العمر 30-18 () 50-31 () أكبر من 51 ()
 3- المؤهلات

المؤهلات	
1- الشهادة الابتدائية	
2- الشهادة الإعدادية	
3- البكالوريوس	
4- الماجستير أو الدكتوراة	
5- أخرى , حدد نوع المؤهل	

4-مكان العمل

- 1- اللجنة الشعبية العامة للزراعة والثروة الحيوانية
 2- اللجنة الشعبية للزراعة بشعبية (حدد الشعبية)
 3- آخر , الرجاء تحديد مكان العمل

5- طبيعة العمل

طبيعة العمل	
أمين لجنة شعبية للزراعة	
مدير ادارة	
رئيس قسم	
خبير	
اخرى	

6- الخبرة في المجال الزراعي () سنة

ثانيا : معلومات عامة حول القطاع الزراعي

7- الى اي مدى تعتقد ان القطاع الزراعي له دور مهم في التنمية الاقتصادية في ليبيا ؟

- 1- مهم جدا () 2- مهم () 3- متوسط الاهمية () 4- غير مهم () 5- غير مهم على الاطلاق ()

العبارات	موافق جدا	موافق	نوعا ما	غير موافق	غير موافق على الاطلاق
1- السياسات الزراعية ليست مناسبة للقطاع الزراعي الليبي بشكل عام					
2-السياسات الزراعية لا تلبي احتياجات المزارعين					
3-السياسات التمويلية غير كافية لتنفيذ هذه السياسات					
4-الجهات الحكومية عاجزة عن تنفيذ السياسات الزراعية					
5-دور القطاع الزراعي مهم في تنمية القطاع الزراعي في ليبيا					
6-الحد من تدخل الدولة في الانشطة الاقتصادية					

8- ما هو رأيك في العبارات اللاحقة والخاصة بالسياسات الزراعية

9- وفقا لخبرتك في المجال الزراعي , اي من العقبات التالية تواجه تنمية القطاع الزراعي في ليبيا

العقبات	
عقبات طبيعية (المناخ والارض والمياه الخ)	
عقبات تتعلق بالتسويق الزراعي	
عقبات تتعلق بالتمويل الزراعي	
عقبات تتعلق بالسياسات الزراعية	
عقبات تتعلق بالبنى التحتية للأنشطة الاقتصادية (الطرق والموانئ والمطارات..... الخ)	
عقبات تتعلق باستخدام التكنولوجيا الحديث	
عقبات متعلقة بالجهاز الاداري المسؤول عن القطاع الزراعي	

اي عقبات اخرى الرجاء ذكرها

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.....

أسئلة متعلقة بالسياسات الزراعية

10/ الى اي مدى تعتقد ان السياسات الزراعية في ليبيا كافية للقطاع الزراعي

- 1- كافية جدا () 2- كافية () 3- نوعا ما () 4- غير كافية () 5- غير كافية على الاطلاق ()

11/ حسب رأيك ما هي السياسات الزراعية التي ترى بانها يجب ان تعطى الاولوية

- 1- سياسة الدعم () 2- سياسة التسويق () 3- الائتين معا () 4- اخرى ()

12/ كيف تقيم السياسات الزراعية في ليبيا

- 1- ناجحة جدا () 2- ناجحة () 3- تحتاج الى تطوير () 4- غير ناجحة () 5- غير ناجحة على الاطلاق ()

13/ اذا كانت السياسات الزراعية غير ناجحة , فالسبب في رأيك يعود الى

السبب	
السياسات لا تخدم احتياجات المزارعين	
لا توجد مساحات اراضي صالحة للزراعة	
هناك مشاكل تتعلق بالتكنولوجيا وانظمة الري وانظمة فحص التربة	
لا يوجد اهتمام كافي بالقطاع من ناحية التمويل	
ضعف اداء المكاتب الارشادية والاستشارات الزراعية	
المزارعين ليسوا على استعداد لتقبل الاراء والنصائح الخاصة بالطرق الزراعية والتسويقية	

اسباب اخرى , اذكرها

.....

.....

.....

.....

14/ هل تعتقد ان السياسات الزراعية المطبقة متشابهة في جميع المناطق الزراعية

- 1- نعم () 2- لا ()

اذا كانت الاجابة (لا) الرجاء ذكر السبب

.....

.....

.....

.....

15/ كما تعلمون , ليبيا طبقت نهجين مختلفين من السياسات الزراعية (نهج الخطط والبرامج الزراعية) خلال الفترة من 1973/1985 والنهج الثاني (الخطط السنوية) بعد عام 1985 , حسب رأيك ما هو النهج الذي تراه مناسباً للقطاع الزراعي ؟ ولماذا ؟

1-نهج الخطط والبرامج الزراعية () نهج التخطيط السنوي () لماذا

.....

16 / الى اي مدى انت موافق على تغيير السياسات الزراعية في ليبيا الى النهج السنوي ؟
1- موافق جدا () 2- موافق () 3- نوعا ما () 4- غير موافق () 5- غير موافق على الاطلاق ()

17/ ما هو السبب في رأيك وراء تغيير نهج السياسات الزراعية ؟
1- اسباب مالية 2- اسباب لقيود طبيعية 3- اسباب سياسية 4- اسباب اخرى ()
اذا كانت الاجابة لاسباب اخرى ,
اذكرها.....

.....

18/ هل تعتقد ان توافق على ان تغيير نهج السياسات الزراعية ادى الى تطوير اداء القطاع الزراعي في ليبيا ؟
- موافق جدا () 2- موافق () 3- نوعا ما () 4- غير موافق () 5- غير موافق على الاطلاق ()

19/ الى اي مدى تعتقد ان السياسات الزراعية في الفترة من 1973/1985 فعالة في تحقيق الاهداف التالية

الاهداف					
حماية وصيانة الموارد الطبيعية بالطرق المثالية	فعالة جدا	فعالة	نوعا ما	غير فعالة	غير فعالة على الاطلاق
تحقيق نسب عالية من الاكتفاء الذاتي في بعض السلع الزراعية					
تطوير اللوائح والتشريعات الخاصة بالقطاع الزراعي					
تطبيق وسائل التكنولوجيا الحديثة					
تنظيم التسويق الزراعي على مستوى الشعبيات او المناطق الزراعية					
زيادة مساهمة القطاع الزراعي في الناتج الاجمالي المحلي					

20/ الى اي مدى تعتقد ان السياسات الزراعية في الفترة بعد 1986 فعالة في تحقيق الاهداف التالية

الاهداف					
حماية وصيانة الموارد الطبيعية بالطرق المثالية	فعالة جدا	فعالة	نوعا ما	غير فعالة	غير فعالة على الاطلاق
تحقيق نسب عالية من الاكتفاء الذاتي في بعض السلع الزراعية					
تطوير اللوائح والتشريعات الخاصة بالقطاع الزراعي					
تطبيق وسائل التكنولوجيا الحديثة					
تنظيم التسويق الزراعي على مستوى الشعبيات او المناطق الزراعية					
زيادة مساهمة القطاع الزراعي في الناتج الاجمالي المحلي					

121/ اي من هذه المشاكل تراها مقيدة للسياسات الزراعية في ليبيا ؟

المشاكل	مشكلة كبيرة جدا	مشكلة كبيرة	نوعا ما	ليست مشكلة	ليست مشكلة على الاطلاق
تدخل الجهات الرسمية					
ضعف التنسيق والتعاون بين الجهات المسؤولة عن القطاع الزراعي					
تبني سياسات او خطط او برامج زراعية غير متكاملة					
سياسات الدعم لا تلبي احتياجات المزارعين					
السياسات التمويلية والتسويقية غير مناسبة					

إذا كانت هناك مشاكل أخرى،

اذكرها.....

.....

122/ ليبيا لديها ميزة نسبية في انتاج بعض السلع مثل (التمور وزيت الزيتون والاسماك) الى اي مدى ترى ان السياسات الزراعية يجب ان تعطى اهتماما اكثر لمثل هذه السلع الزراعية ؟

- موافق جدا () -2 موافق () -3 نوعا ما () -4 غير موافق () -5 غير موافق على الاطلاق ()

123/ الى اي مدى ترى فعالية الدولة في الاشراف على التسويق الزراعي ؟

1-فعالة جدا () -2 فعالة () -3 نوعا ما () -4 ليست فعالة () -5 ليست فعالة على الاطلاق ()

إذا كانت ليست فعالة فما هو السبب برأيك

.....

124/ كيف ترى اهمية القطاع الخاص في تنمية الزراعة في ليبيا ؟

1- مهم جدا () -2 مهم () -3 نوعا ما () -4 غير مهم () -5 غير مهم على الاطلاق ()

125/ كيف يتم اتخاذ القرار الزراعي ؟

آلية اتخاذ القرار الزراعي	
حسب البيانات المتاحة	
بعد الاستشارة مع المسؤولين	
حسب التعليمات الفوقية	
بعد المناقشة مع المزارعين	
بالاستعانة بخبرات الدول المتقدمة	
طريقة التجربة والخطأ	
حسب خبرتنا في المجال الزراعي	

26/ كيف ترى السياسات الزراعية في ليبيا ؟

1- مدروسة ومخطط لها () 2- ارتجالية ووقت الازمات () 4- في مرحلة التطوير و التنمية ()

5- غامضة وغير واضحة ()

27/ خل هناك تشابك في القرارات بين لجنة صنع القرار والجهات الرسمية العليا ؟

1- نعم () 2- لا () 3- لا اجابة ()

اذا كانت الاجابة نعم , كيف يحدث ذلك

.....
.....

28/ ما مدي اهمية العوامل التالية في اعاقه تنفيذ السياسات الزراعية في ليبيا ؟

العوامل	مهم جدا	مهم	نوعا ما	غير مهم	غير مهم على الاطلاق
عوامل مناخية					
عوامل طبيعية متعلقة بالاراضي وخصوبتها					
عوامل بولوجية تتعلق بالافات والامراض النباتية					
عوامل متعلقة بالمياه					
عوامل متعلقة بأنظمة الري					
غياب المعلومات الزراعية والخدمات الارشادية والتوجيه					
غياب الصناعات الزراعية					
ضعف الكفاءات البشرية في المؤسسات الحكومية					
ضعف التخطيط الزراعي					
ضعف البنى التحتية في المناطق الزراعية					
ضعف سياسات الاعانات الزراعية للمزارعين					
عوامل متعلقة بحجم المزرعة					
غياب المؤسسات الحكومية المتعلقة بالتسويق الزراعي في المناطق الزراعية					
عوامل متعلقة بسياسات الواردات الزراعية					
ضعف سياسات البحوث الزراعية					
ضعف دور القطاع الخاص في النشاط الزراعي					
غياب التنسيق والتعاون بين المؤسسات الحكومية					
ضعف اللوائح المتعلقة باستيراد الاسمدة العضوية والكيمياوية					
غياب نظم المراقبة والمتابعة في المؤسسات الحكومية					
ضعف التمويل الزراعي					

29/ إذا كنت تعتقد ان السياسات الزراعية تحتاج الى تطوير , ما هي مقترحاتك بشأن تطوير سياسات القطاع الزراعي ؟

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Farmer's Questionnaire

Dear Farmer

My name is **Khaled Allafi**. I am PhD student at Sheffield Hallam University, faculty of Development and Society

I am doing a field study about agricultural policy in Libya. This is part of practical framework of the PhD thesis. I am doing a field study about the opinions and positions of farmers on agricultural policies in Libya and their impact on the performance at farm level.

This part is a practical framework of the PhD thesis. I would like you to answer the questions. All answers will be dealt with of immediately after the analysis and discussion. Feel free to answer any questions.

If have any questions, please ask me when you return your questionnaire.

Yours sincerely

Khaled Allafi

Q1 Information on farmers

Q1.1 Age group ☐ - < 30 ☐ 30 - 40

☐ 41 - 50 ☐ 50 - 60 ☐ > 60

Q1.2 Educational level

☐ Illiterate ☐ Primary ☐ Secondary ☐ -college or technical
school ☐ higher Study

Q1.3 What is the number of family members?

☐ < 5 ☐ 5-10 ☐ > 10

Q1.4 How long have you been a farmer?

☐ < 5 years ☐ 6 - 10 years ☐ > 10 years

Q1.5 Do you have other sources of income

☐ Yes ☐ No

Q2 Information about farm and crop cultivated

Q2.1 what is the size of your farm?

☐ <5 Ha ☐ 5- 10 Ha ☐ 11-20 Ha
☐ >20 Ha

Q2.2. How did you obtain this farm?

☐ Family property ☐ Inherited ☐ Bought ☐ on lease ☐
Granted from government

Q2.3. what crops do you cultivate?

☐ Fruit ☐ Vegetables ☐ Grain ☐
] other specify.....

Q2.4 why did you choose this product for cultivation?

☐ Traditional ☐ Trial ☐ A devised by experts ☐ Profitable ☐
other reason, specify...

Q2.5 what is the nature of your land?

☐ Irrigated ☐ Rain fed ☐
both

Q2.6 How many workers do you have?

☐ <5 workers ☐ 6 - 10 workers ☐ 11- 15 workers
☐ >15 workers

Q 3.8 Do you participate in agricultural decision-making?

☐ Yes

☐ No

Q3.9 To what extent do you agree with the following statements?

Statement	SA	A	M	DA	SD
The State provides encouraging prices for production					
Current agricultural policies contribute positively to the development of agricultural production					
The Government provides effective extension services					
Agricultural Bank loans contribute positively to improve of agricultural production					
The gap between the government and farmers influences the effectiveness of agricultural policies					

SA: strongly agree A: agree M: moderate D: disagree SD: strongly disagree

Q.3.10 Do you think that there is an improvement in the performance of your farm?

Farmer's Questionnaire: Arabic Version

استمارة الاستبيان الخاصة بالمزارعين
عزيزي المزارع

انا خالد عبدالعاطي موسى اللافي طالب دكتوراة في جامعة شيفيلد هالم في المملكة المتحدة .
اقوم بدراسة ميدانية حول السياسات الزراعية في ليبيا. هذا الجزء هو الإطار العملي لأطروحة الدكتوراه. وارغب في تقييم
السياسات الزراعية في ليبيا من وجه نظر المزارعين وسأكون سعيدا للإجابة على هذه الأسئلة، وأريد أن أذكرك أن جميع
الأجوبة ستكون سرية، وسوف يتم التخلص منها مباشرة بعد تحليل والمناقشة، لذلك ، أطلب منك أن تجيب على الاسئلة التي
تعتقد انها مطابقة لرايك ، وأنا أعلم ان الإجابة على هذا الاستبيان وسوف تعود بالنفع على القطاع الزراعي بشكل خاص
وعلى ليبيا بشكل عام

إذا كانت هناك أي سؤال غير واضح من فضلك لا تتردد في السؤال عند تسليم الاستبيان

تفضلوا بقبول فائق الاحترام
خالد عبد العاطي موسى اللافي

عزيري المزارع

هذا الاستبيان هو جزء من الإطار العملي لأطروحة دكتوراه. سأكون سعيدا بالإجابة على هذه الأسئلة، وأريد أن أشير إلى أن جميع الأجابات ستكون سرية وسيتم التخلص منها فوراً بعد التحليل، لذلك ، أطلب منكم اختيار الإجابة التي تعتقد انها مطابقة لرأيك.

تفضلوا بقبول فائق الاحترام

الباحث

1- معلومات عامة

العمر

أقل من 30 سنة 40-30 50-40 60-50 أكبر من 60

المستوى التعليمي

أُمِّي ابتدائي اعدادي ثانوي جامعي دراسات عليا

عدد افراد الاسرة

أقل من 5 افراد 5 - 10 افراد أكثر من 10

فرد

منذ متى وانت تعمل بالمزرعة ؟

أقل من 5 سنوات 5 - 10 سنوات أكثر من 10 سنوات

هل لديك مصدر اخر للدخل غير الدخل المزرعي ؟

نعم لا

2- أسئلة متعلقة بالمزرعة

ما هي مساحة المزرعة بالهكتار؟

أقل من 5 هكتار 5-10 هكتار 11-20 هكتار أكثر من 20 هكتار

كيف تحصلت على هذه المزرعة

ملك للعائلة ميراث شراء عقد منحة من الدولة

ما هو نوع المحصول الذي تقوم بزراعته ؟

حبوب خضروات فواكه أخرى

لماذا اخترت هذا النوع من المحصول ؟

تقليدي بالتجربة نُصحت من قبل خبراء مريح سبب اخر

ما هي نوع الزراعة ؟

مروية بعلية الاثنان

ما هو عدد العمال بالمزرعة ؟

أقل من 5 عمال

5 - 10 عمال

11 - 15 عامل

أكثر من 15 عامل

ما هي قيمة مبيعات الانتاج سنويا ؟

ما هو نوع السماد الذي تستخدمه في المزرعة ؟

كيماوي

عضوي

الاثنان معا

من اين تحصلت على الاسمدة ؟

شراء

الدولة

الجمعيات التعاونية

مصدر اخر

تقريبا , ما هي تكلفة الاسمدة المستخدمة في السنة ؟

اسئلة متعلقة بالسياسات الزراعية

ما هي درجة اهتمام الدولة بالقطاع الزراعي ؟

كبيرة جدا

كبيرة

متوسطة

بسيطة

بسيطة

جدا

اختر الاجابة التي تعتقد انها مطابقة لرأيك

العبارة	فعال جدا	فعال	متوسط	غير فعال	غير فعال على الاطلاق
مشاركة الحكومة في حل مشاكل المزارعين					
إجراءات الحصول على القروض الزراعية					
حالة البنية التحتية (الطرق, والموانئ) والمخازن وغيرها					
دور الجمعيات التعاونية					
بيئة السوق فيما يتعلق بعملية بيع المنتجات (المسافة , الاسعار , العرض, الطلب)					

من اين تحصل على الالات الزراعية والبذور ؟

شراء

الدولة

الجمعيات التعاونية

اخرى

كيف تقوم بعملية بيع الانتاج ؟

للمستهلك مباشرة

للدولة

للتجار او الشركات

كيف تتحدد اسعار السلع الزراعية ؟

اخرى

قوى الطلب والعرض (السوق)

الدولة

هل تشارك في عمليات صناعة القرار الزراعي من خلال اجتماعات مع المسؤولين في القطاع ؟

لا

نعم

الى اى مدى توافق على العبارات الاتية

العبارة	وافق بشدة	وافق	متوسط	لا اوافق	لا اوافق بشدة
الدولة تقوم بتوفير أسعار مشجعة للإنتاج					
السياسات الزراعية الحالية تسهم بشكل ايجابي في تطوير الإنتاج الزراعي					
الحكومة تقوم بتوفير خدمات ارشادية فعالة					
القروض التي تحصلنا عليها من البنك الزراعي ساهمت بشكل كبير في تحسين الإنتاج الزراعي					
الفجوة بين الحكومة والمزارعين هي احد سبب عدم فعالية السياسات الزراعية					

س/ هل تعتقد ان هناك تطورا في اداء مزرعتك مؤخرا ؟

Appendix B: Interviews Questions

Interviews-Farmers

Dear Farmer

My name is Khaled Allafi. I am PhD student at Sheffield Hallam University, Faculty of Development and Society.

I am doing a field study about agricultural policy in Libya. This is part of practical framework of the PhD thesis. I am doing a field study of opinions and position of farmers with respect to agricultural policies in Libya and their impact on the performance at farm level.

I would like to answer questions. All answers will be recorded and disposed of immediately after the analysis and discussion. Feel free to answer the questions.

Yours sincerely

Khaled Allafi

Interviews questions

Q1: Do the agricultural policies in Libya have an impact on the nature and the form of agricultural activity in general and on performance at farm level in particular?

Q2: Do you understand the processes of decision-making in agricultural policy? Do you, as farmers participate in policy, decision-making processes? Can you explain your understanding of the nature of the relationship between farmers and the Secretariat of Agriculture?

Q3: Economic structure in Libya has seen changes through the moving of ownership of some agricultural government projects to the workers, as well as reduction of state intervention in agricultural activity to engage the private sector in agricultural activities. Can you give me more information about the impact of these changes on the agricultural sector and how do you evaluate these changes? Do you know the reasons behind these changes?

Q4: In your experience, what facilities were in place and available to farmers when they set out to encourage farmers to engage in agricultural activity? Were these provided by the state or by private institutions? How would you assess agricultural activity and the availability of these facilities now?

Q5: Could you give me more information about the changes that have occurred regarding the size of farms productivity, production outputs, and crop structure during the last three decades and the reasons behind the changes?

Q6: As you know, during the period 1973/1985, Libya instituted set of plans and programmes (Five-year plans and Three-year plan). Can you tell me the most important positive results of those policies on the agricultural sector in general and on farm performance, and any the drawbacks of those policies?

Q7: With respect to the current agricultural policies approach (annual approach), could you explain to me the impact of those policies on agricultural farm performance and whether the current policy is to develop the farms performance? And also what are the most important shortcomings of these policies?

Q8: If we want to directly compare the two approaches. Any of the approaches do you think is the best and appropriate for the agricultural sector and why?

Q9: what were the past roles played by the cooperative societies? What is the nature of services provided to small farmers and is its role is still present today?

Q10: How would you evaluate the performance of funding and marketing policies, and their impact on farm outputs through the two different approaches?

Q11 Finally, what are the most important points which you believe should be taken into account when planning agricultural policies to develop the agricultural sector?

Interviews-farmers: Arabic Version

اسئلة المقابلات مع المزارعين باللغة العربية

عزيزى المزارع

في المملكة المتحدة . انا خالد عبدالعاطي موسى اللافي طالب دكتوراة في جامعة شيفيلد هالم
اقوم بدراسة ميدانية حول السياسة الزراعية في ليبيا. هذا الجزء هو الإطار العملي لأطروحة الدكتوراه. وارغب في تقييم
السياسات الزراعية في ليبيا من وجهة نظر المزارعين وسأكون سعيدا للإجابة على هذه الأسئلة، وأريد أن أذكرك أن جميع
الأجوبة ستكون سرية، وسوف يتم التخلص منها مباشرة بعد تحليل والمناقشة، لذلك ، أطلب منك أن تجيب على الاسئلة التي
تعتقد انها مطابقة لرأيك ، وأنا أعلم أن الإجابة على هذا الاستبيان وسوف تعود بالنفع على القطاع الزراعي بشكل خاص
وعلى ليبيا بشكل عام.

إذا كانت هناك أى سؤال غير واضح من فضلك اطلب ذلك لكى اعطيك مزيدا من التوضيح

تفضلوا بقبول فائق الاحترام
خالد عبد العاطي موسى اللافي

اسئلة المقابلات

السؤال الاول: هل للسياسات الزراعية اثر على طبيعة وشكل النشاط الزراعي بشكل عام وعلى الاداء على مستوى المزرعة

السؤال الثاني : هل لديك معلومات حول ماعية اتخاذ القارات السياسية الزراعية ؟ وهل تشارك في اتخاذ القرارات المتعلقة بالقكاع الزراعي ؟ وميف يمكن لك ان تصع لنا طبيعة العالعة بينكم وبيم الامانة الزراعة ؟

السؤال الثالث: شهد الهيكل الاقتصادي في ليبيا تغييرات كبيرة منها تمليك، بعض المشاريع الزراعية الحكومية الكبيرة للعمال، وكذلك تغيرات تتعلق بتقليص او الحد من تدخل الدولة في النشاط الزراعي ومحاولة إشراك القطاع الخاص في الأنشطة الزراعية. هل يمكن ان تعطيني مزيد من المعلومات حول تأثير هذه التغييرات على القطاع الزراعي، وكيف تقومون هذه التغييرات؟ وهل لديك اي فكرة حول الأسباب الكامنة وراء هذه التغييرات؟

السؤال الرابع : وفقا لخبرتك، ما هي التسهيلات التي كانت متوفرة للمزارعين في بداية الانخراط في النشاط الزراعي لتشجيع المزارعين على ممارسة هذا النوع من النشاط ، سواء تم توفيرها من قبل الدولة أو المؤسسات الخاصة، وكيفية تقييم النشاط الزراعي و توفر هذه التسهيلات الآن؟

السؤال الخامس : هل يمكن أن تعطيني المزيد من المعلومات حول التغييرات التي حدثت فيما يتعلق بحجم المزرعة، والإنتاجية، وحجم الانتاج وهيكل المحاصيل خلال العقود الثلاثة الماضية، والأسباب الكامنة وراء هذه التغييرات؟

السؤال السادس: كما تعلمون خلال الفترة من 1973-1985، تم تطبيق مجموعة من الخطط والبرامج الزراعية في ليبيا (خطتين خمسية وخطة مدتها ثلاث سنوات). هل يمكن أن تخبرني أهم النتائج الإيجابية لهذه السياسات على القطاع الزراعي بشكل عام وعلى أداء المزرعة بشكل خاص ، وما هي اهم العيوب في تلك السياسات؟

السؤال السابع : فيما يتعلق نهج السياسات الزراعية الحالية (النهج السنوي)، هل يمكن ان تشرح لي أثر هذه السياسات على أداء المزرعة وعما إذا كانت السياسة الحالية كان قادرة على تطوير أداء المزارع وأيضا ما هي أوجه القصور في هذه السياسات ؟

السؤال الثامن : اذا اردت ان تقارن نريد بشكل مباشر بين نهجي السياسات الزراعية النهج الاول (1973-1985) والنهج الثاني منذ 1986 فأني من النهجين في رأيك هو الأفضل والأنسب لقطاع الزراعة؟ ولماذا ؟

السؤال التاسع : ما هو الدور الذي كانت تقوم به الجمعيات التعاونية في الفترة الاولى وهي فترة الخطط والبرامج الزراعية ؟ وما هو تقييمك للتسهيلات المقدمة للمزارعين وهل هذه الجمعيات لازالت تقوم بنفس الدور الان ؟

السؤال العاشر: كيف تقيم أداء السياسات التمويلية والتسويقية وتأثيرها على المخرجات الزراعية خلال نهجي السياسات الزراعية المختلفين ؟

السؤال الحادي عشر: أخيرا، ما هي أهم النقاط التي تعتقد أنها يجب أن تؤخذ في الاعتبار في السياسات الزراعية او التي يجب ان اعطاها مزيدا من الاهتمام عند التخطيط للسياسات الزراعية لتطوير القطاع الزراعي في ليبيا ؟

Appendix C: Sample Transcript of Interviews

Q1 Do the agricultural policies in Libya have an impact on the nature and the form of agricultural activity in general and on the performance at farm level in particular?

The agricultural production and cultivated areas have seen dramatic increase during the nineteen-seventies and nineteen-eighties (during the period of the three-and five-year plans) and led to improved financial situation and social status of farmers where farming became attractive and provided adequate standard of living. This was the result of the interest of the state through implementing integrated agricultural policies, such as lending, support policy, pricing policy and extension policy

Q2 Do you understand the processes of decision-making in agricultural policy? Do you as farmers participate in policy decision-making processes? Can you explain your understanding of the nature of the relationship between farmers and the Secretariat of Agriculture?

Farmers do not participating in any agricultural decisions now, and there are no decisions in agriculture nowadays , where farmers cultivated what they think it is appropriate for them , regardless of what may cause such as deterioration of the land as a result of the use of pesticides and chemicals fertilizer , and farmers now use all possibilities to achieve maximum profit, either in the past there have been regular meetings at cooperative societies where the farmers discussed problems and obstacles and try to find solutions and involve officials to help through Secretariat of Agriculture in each region and then up to high authorities. But now there is no any decisions at all, and have not been issuing any decision, and the decisions are immediate and farmers are away from the process of taking a decision. It should be noted here that in 2005 there was an attempt to involve the farmer in agricultural deciding and that was in Al Jabal Al akhder region , where the governor of the region asked the farmers to exploit part of their lands for cultivate maize crops to use as animal feed in the region , which is famous region for livestock and this was an attempt to involve farmers and also the State is committed to providing all machinery, seeds and inputs produce of this crop, as well as the adoption of state factories to grind corn to provide fodder for animals, where there was a shortage of fodder where barley

was used as feed for animals and it was high cost . Farmers enthused and agreed to the decision after held several meetings at the level of Al Jabal Al Akhder region with the governor of the region and farmers agreed to implement this plan, but quickly stopped due to the change of administrative structure, we can say this was the first time where they had been engaging farmers in particular agricultural decision in agreement with the state and it was a very good step despite not applied.

Q3: Economic structure in Libya has seen changes through moving ownership of some agricultural government projects to the workers, as well as reduction of state intervention in agricultural activity to engage the private sector in agricultural activities. Can you give me more information about of the impact of these changes on the agricultural sector and how do you evaluate these changes? Do you know the reasons behind these changes?

State was supervising the strategic agricultural projects , especially in the field of grain, but the production and productivity of these projects were low because the lack of supervision and follow-up committees to perform these projects and therefore , the dominant feature of state' projects was economically loss , but I think that the state intervention and supervision should be in another important aspect which is the provision of production inputs such as fertilizers, seeds and machinery due to the high costs of these inputs that imported by the private sector, which farmers may not be able to acquisition because of financial inability, and in my view in the state intervention on inputs, particularly fertilizer is very necessary because of the use of non-scientific and non-thoughtful fertilizer by farmers,

State Ownership of projects may not be a good idea, but the supervision of the state on the supply of inputs and provide extension agents and specialists engineers is essential and very necessary especially with regard to the health of the consumer and the environment

Q4: According to your experience, what are the facilities that were available to farmers at the beginning of engaging in agricultural activity to encourage farmers to engage in agricultural activity, whether were provided by the State or by private institutions, and how to assess agricultural activity and the availability of these facilities now?

When state wanted to encourage farmers to engage in the agricultural sector, provided everything needed for farms for example distributed farms, machinery, equipment and dug wells and provided cattle, sheep and poultry as well as paved roads to and from the farm to the market and electricity networks and provided fertilizer, seeds and pesticides as well as advisors, in addition to appropriate prices policy to encourage them to cultivate particular crop, but now, unfortunately, State left the sector without even oversee and thus a farmer became decide for himself what he should planted or quantity produced and determines the price and quantities of fertilizers that may cause damage for the land m we can say, agriculture has become a repellent and not attractive activity.

Q5: Could you give me more information about changes that have occurred regarding to the size of farm, productivity, the size of production, structure of crops during the last three decades and the reasons behind the changes?

Some spaces were left as pasture for animals and some was used for agriculture, where the state encourages farmers to increase cultivated area, especially grain, apples, citrus, because the incentive prices for these crops by the state, as well despite the fact that productivity was lower compared to productivity now, but that was due to the excessive use and non-thoughtful of Fertilisers

Most agricultural areas in the region was planted by grain because of the price policy that applied with remunerative prices for grain crops and apples and grapes, but in the nineties crop structure was changed by farmers themselves, due to the lack of appropriate policy and farmers turned to cultivate Barley at the expense of Wheat due to carry barley to weather conditions as well as use as feed for animals in addition to the absence of appropriate market conditions, as well as farmers turned to grow fruits and irrigated agriculture crops for being more profitable and cover the cost of production to a certain extent, and I repeat that trending to grow irrigated crops led to the use of chemical fertilizer which led to many problems, including environmental problems and other problems.

Q6 As you know during the period of 1973-1985, Libya applied set of plans and programmes (Five-year plans and Three-year plan). Can you tell me the most important positive results of those policies on the agricultural sector in general and on farm performance, and any the drawbacks of those policies?

Agriculture activity as a trades and profession in the first period was better than now, where more attention had been paid to agricultural inputs at affordable prices to farmers, especially fertilizer, seeds and machinery, as well as insurance for loss or fire, as well as output support through incentive price, in addition to the provision of housing and buildings, animals and thus agriculture was attractive to engage and to get an appropriate profit margin and therefore an adequate standard of living.

Q7: With respect to the current agricultural policies approach (annual approach) , could you explain to me the impact of those policies on agricultural farm performance and whether the current policy was is to develop the farms performance and also what are the most important shortcomings of these policies?

Now there is no interference of the state and no support for either input or output and therefore higher production costs and lower prices of agricultural products, which led to losses for producers and agriculture as a profession do not providing a decent life for the farmer and his family, that led to the phenomenon of the division of farmland into different non-agricultural activities such as housing, or for commercial purposes because the economic returns from agriculture became low compared to other economic activities other.

Q8: If we want to directly compare the two approaches. Any of the approaches do you think is the best and most appropriate for the agriculture sector? Why?

For me the first period was prosperity period for agriculture in Libya, where good policies had been applied and good oversee by state, production more regulated in addition to interest in the aspects of guidance and awareness and the existence of cooperative societies and the performance of banks was better because the state was interested in the agricultural sector and considers it an

important sector and effective sector , but now the state is no longer interested in the agricultural sector and headed attention to other sectors such as the industrial and services sectors and the agricultural sector is no longer of any importance and became the farmer designed his policy in the agricultural sector, which led to the deterioration of the sector and production and productivity and all farms had a plan and goal differs from other farmers and this greatly affected the agricultural sector and its performance recently.

Q9 what were the past roles played by the cooperative societies? What is the nature of services provided to small farmers and is its role is still present today?

Cooperative societies reflected the wishes and needs of the farmers where they provide fertilizer, pesticides and seeds and machinery, as well as extension advices in addition to veterinarians. I can say here the process of agricultural was organized and studied , but unfortunately for some unknown reason and I think it's a political has been reducing the role of these associations that completely stopped on provide any of the input and output and these inputs became available through the private sector with high costs which led to the inability of the farmer to get them hence the deterioration of the agricultural sector and farms and agricultural sector became heavily non attractive and useless for farmers.

Q 10 How would you evaluate the performance of funding and marketing policies, and their impact on farm outputs through the two different approaches?

In the nineteen-seventies and nineteen-eighties, the agricultural sector was profitable and the state supported farmers by providing loans of short and medium -term to purchase machinery and equipment, seeds and fertilizer as well as loans to dig wells. in that time , farmers got a good economic returns and therefore these loans help farmers to continue and develop agriculture, but now due to the availability of agricultural inputs only by private sector with very high prices and even loans available from the bank it does not provide the opportunity to receive these inputs. So farms may not have the desire to pay premiums loan which may not be recoverable as a result of low return, so the relationship between farmers and the bank depends on the effectiveness of agricultural sector, as well as the bank became puts in difficult conditions as a

result of non-payment of premiums from farmers as a result of the reasons mentioned above.

The prices depend on supply and demand and there is no supervision from the State there is no committees for pricing as it was in the past and as a result of the absence of policies especially crop structure so irrigated crops often piled up crop especially in the market and the prices come down and increase losses

Q11 Finally, what are the most important points which you believe it should be taken into account when planning agricultural policies to develop the agricultural sector?

Any activity without planning or policy cannot be successful, so the agricultural sector as a result of being a sensitive sector because it depends on the circumstances of natural and climatic which are not under control, as well as for being provides food for the population then I see that without clear policies and deliberate and without knowing the problems of farmers and resolve it, as well as without paying attention to the support of farmers, both inputs or outputs, and provide institutions linking farmers to the state, it will be difficult to develop the agricultural sector in Libya, other point, state must develop agricultural policies such as crop structure policy and pricing policy and activating the role of cooperative societies, in addition to financing farmers for the purpose of development of performance farms.

Appendix D: Tables

Table 1 Population and the relative importance of the agricultural labour force in Libya during the period of 1986-2007 (1000 Inhabitant)

Year	Population	Total labour force	% of total population	Agricultural labour force	% of total labour force
1986	3416.90	904.70	26.50	178.50	19.70
1987	3513.80	936.80	26.70	180.00	19.20
1988	3613.40	963.10	26.70	186.00	19.30
1989	3715.90	1094.40	29.50	191.60	17.50
1990	3821.30	1018.60	26.70	188.90	18.50
1991	3929.60	1012.50	25.80	189.60	18.70
1992	4041.10	1044.00	25.80	195.70	18.70
1993	4155.70	1113.70	26.80	201.20	18.10
1994	4273.50	1149.00	26.90	206.00	17.90
1995	4389.70	1185.50	27.00	212.70	17.90
1996	4519.40	1224.00	27.10	219.50	17.90
1997	4647.50	1255.10	27.00	219.20	17.50
1998	4768.80	1323.70	27.80	225.10	17.00
1999	4895.10	1383.80	28.30	232.00	16.80
2000	5124.50	1455.00	28.40	239.10	16.40
2001	5299.90	1458.00	27.50	103.40	7.10
2002	5484.40	1575.00	28.70	101.00	6.40
2003	5826.60	1590.00	27.30	97.00	6.10
2004	5872.90	2018.00	34.30	93.16	4.60
2005	6077.33	2076.00	34.10	91.00	4.30
2006	5637.03	1845.00	32.70	88.89	4.80
2007	5776.85	1639.10	28.30	86.83	5.20
Average	4672.78	1330.20	28.08	169.38	12.30

Source: GPC, Management Plans and Programmes, Economic and Social Indicators (1962-2000) .Tripoli, Libya, 2001.

(GPC): the Economic Development of Libya (1970-2003), Tripoli, Libya, 2004.
(AOAD) and Elmessallati, 2007)

Table 2

The evolution of worker productivity in the agricultural sector in Libya during the period 1973/1985

Year	Ag GDP Million	Agricultural labour force	Worker productivity in the agricultural sector LYD
1973	60.00	129.00	465.10
1974	64.70	131.40	492.40
1975	82.90	133.40	621.40
1976	99.70	141.20	706.10
1977	90.00	144.90	621.10
1978	122.10	147.90	825.60
1979	140.40	150.10	935.40
1980	236.40	153.40	1541.10
1981	273.60	162.40	1684.70
1982	285.70	167.50	1705.70
1983	303.00	173.00	1751.40
1984	323.00	185.50	1741.20
1985	342.20	177.60	1933.30
Average	186.44	153.60	1155.70

Source: (Elmessallati, 2007) & (AOAD)

Table 3

The evolution of worker productivity in the agricultural sector in Libya during the period of 1986-2007

Year	Ag GDP Million	Agricultural labour force	Worker productivity in the agricultural sector LYD
1986	384.70	178.50	2155.20
1987	411.20	180.00	2284.40
1988	423.30	186.00	2275.80
1989	439.80	191.60	2295.40
1990	482.90	188.90	2556.40
1991	542.40	189.60	2860.80
1992	630.20	195.70	3220.20
1993	708.80	201.20	3522.90
1994	827.90	206.00	4018.90
1995	933.40	212.70	4388.30
1996	1074.50	219.50	4895.20
1997	1267.00	219.20	5780.10
1998	1394.30	225.10	6194.10
1999	1449.90	232.00	6249.60
2000	1439.70	239.10	6021.30
2001	1392.00	103.40	13462.30
2002	1348.80	101.00	13354.50
2003	1375.00	97.00	14175.30
2004	1107.00	93.16	11882.00
2005	1186.00	91.00	13032.00
2006	1245.00	88.89	14107.00
2007	1434.00	86.83	16515.00
Average	977.17	169.38	7056.66

Source: General Planning Council, Management Plans and Programmes, Economic and Social Indicators (1962-2000), Tripoli, Libya, 2001

Central Bank of Libya, Annual Report, Tripoli, Libya

Elmessallati (2007) and (AOAD).

Table4

The evolution of Agricultural Bank loans in Libya during the period of 1973/2007 M. LYD

Year	Short term	Medium term	Long term	Total
1973	2783.00	3208.00	1445.00	7436.00
1974	4570.00	4704.00	1925.00	11199.00
1975	3811.00	3985.00	1127.00	8923.00
1976	3812.00	1925.00	3113.00	8850.00
1977	5570.00	1839.00	2605.00	10014.00
1978	6342.00	6711.00	1764.00	14817.00
1979	8037.00	4031.00	1090.00	13158.00
1980	2706.0	1572.00	834.00	5112.00
1981	10576.00	2960.00	1838.00	15374.00
1982	6600.00	4574.00	3379.00	14553.00
1983	3700.00	6400.00	1824.00	11924.00
1984	7570.00	3980.00	1042.00	12592.00
1985	5527.00	3540.00	1236.00	10303.00
Average	5508.00	3802.00	1786.00	11097.00

Source: Agricultural Bank of Libya, annual report, Tripoli, Libya Central Bank of Libya, Annual Report, Tripoli, Libya.

Table5

The evolution of Agricultural Bank loans in Libya during the period of 1973-2007 M. LYD

Year	Short term	Medium term	Long term	Total
1986	2953.00	4428.00	1880.00	9261.00
1987	4660.00	4025.00	2753.00	11438.00
1988	4630.00	6520.00	4850.00	16000.00
1989	13124.00	8775.00	9932.00	31831.00
1990	7471.00	4770.00	6804.00	19045.00
1991	11444.00	3595.00	3508.00	18547.00
1992	6063.00	3370.00	2805.00	12238.00
1993	12997.00	2094.00	967.00	16058.00
1994	9391.00	1795.00	735.00	11921.00
1995	13400.00	2660.00	2092.00	18152.00
1996	11500.00	8710.00	3862.00	24072.00
1997	10440.00	6208	2134	18782
1998	12710.00	5130.00	3100.00	20940.00
1999	14700.00	10500.00	2000.00	27200.00
2000	25800.00	10200.00	1400.00	37400.00
2001	19200.00	11100.00	6200.00	36500.00
2002	9000.00	54500.00	55000.00	118500.00
2003	3710.00	24067.00	52221.00	79998.00
2004	17296.00	33600.00	27735.00	380608.00
2005	9916.00	111925.00	248523.00	375364.00
2006	10000.00	84700.00	386000.00	480700.00
2007	26000.00	103400.00	86600.00	607651.00
Average	11645.77	23003.20	41413.68	76062.60

Sources: Agricultural Bank of Libya, annual report, Tripoli, Libya Central Bank of Libya, Annual Report, Tripoli, Libya.

Table 6 the area of agricultural lands by type of exploitation during the period of 1973-1985
(1000 Ha)

Year	Seasonal crops	Permanent crops	Pasture	Forest
1973	1735.00	310.00	11600.00	534.00
1974	1735.00	313.00	11800.00	534.00
1975	1740.00	315.00	12000.00	534.00
1976	1740.00	318.00	12200.00	534.00
1977	1745.00	320.00	12400.00	534.00
1978	1750.00	323.00	12600.00	610.00
1979	1750.00	325.00	12800.00	610.00
1980	1753.00	327.00	13000.00	610.00
1981	1758.00	327.00	13100.00	610.00
1982	1765.00	330.00	13100.00	610.00
1983	1775.00	335.00	13200.00	610.00
1984	1780.00	340.00	13300.00	610.00
1985	1787.00	340.00	13300.00	685.00
Average	1755.00	324.80	12646.20	586.50

Sources: (FAO database) & (AOAD, Yearly book)

Table 7**The area of agricultural lands by type of exploitation during the period of 1986-2007 (1000 Ha)**

Year	Seasonal crops	Permanent crops	Pasture	Forest
1986	1795.00	340.00	13300.00	690.00
1987	1800.00	340.00	13300.00	695.00
1988	1800.00	340.00	13300.00	700.00
1989	1805.00	340.00	13300.00	685.00
1990	1805.00	340.00	13300.00	690.00
1991	1810.00	350.00	13300.00	695.00
1992	1815.00	350.00	13300.00	700.00
1993	1515.00	350.00	13300.00	703.00
1994	1825.00	350.00	13300.00	700.00
1995	1870.00	345.00	13300.00	700.00
1996	2028.00	338.00	13300.00	700.00
1997	2028.00	335.00	13300.00	700.00
1998	1815.00	335.00	13300.00	700.00
1999	1815.00	335.00	13300.00	700.00
2000	1815.00	335.00	13300.00	700.00
2001	1815.00	335.00	13300.00	600.00
2002	1815.00	335.00	13300.00	600.00
2003	1815.00	335.00	13300.00	600.00
2004	1538.00	258.00	13300.00	600.00
2005	1536.00	258.00	13300.00	600.00
2006	1536.00	258.00	13300.00	600.00
2007	1536.00	258.00	13300.00	600.00
Average	1769.63	325.45	13300.00	666.27

Sources: (FAO database) & (AOAD, Yearly book)

Equation 8

Estimating the Elasticity (E) of GDP equation during the period of (1986/2007) by using Ag GDP as independent variable

$$E = \frac{MP}{AP}$$

$$MP = \frac{\partial GDP_t}{\partial Y}$$

$$MP^* = 72.7$$

$$AP^* = \frac{GDP_t}{Y} = 923.7$$

$$E = \frac{72.7}{923.7} = .07$$

Appendix E: Pictures

Picture 1



The exploitation of agricultural land in residential activities (AL Jabal AL Akhder)

Source: Author field work

Picture 2



The Green Circle Fields in the middle of Al-Kufrah desert, Libya (1985)

Before transferring the ownership to the workers

Source: Zidan (2007)

Picture 3



Al Sareer Agricultural Project (1985)

Before transferring the ownership to the workers

Source: Official website of the Ministry of Agriculture

Picture 4



Al Sareer Agricultural Project 1985)

Before transferring the ownership to the workers

Source: Zidan (2007)

Picture 5



Non-Functional Fruit Juice Factory at Al Jabal Al Akhder (2012)

After transferring the ownership to the workers

Source: Author field work

Picture 6



Non-Functional Dairy Factory at AL Jabal Al Akhder (2012)

After transferring the ownership to the workers

Source: Author field work

Picture 7



Stores that were receiving farmers' produce (2012)

After transferring the ownership to the workers

Source: Author field work

Picture 8



Non Functional factor at Al Jabal Al Akhder due to the lack of government support (2012)

After transferring the ownership to the workers

Source: Author field work

Key issues from the literature (including the study's scope)	Evidence from the stakeholder survey – policy makers (government ministry/ agencies in Libya)	Evidence from the stakeholder survey – policy implementers (farmers in Libya)	Evidence from the Libyan's document search and analysis	The findings of literature review	Critical assessment of the findings
The agriculture sector v. oil and other sectors	60% of decision-makers consider the reason for the change in agricultural policy approach to be financial i.e. The drop in oil revenues in the mid-eighties; 100% agreed that the oil sector is the only source of finance for all other sectors, including agriculture, and the sharp drop in oil prices led to the decrease in development allocations.	70% of farmers attribute loss of labour power to the oil effect through labour migration to the oil sector; 30% stated that the state is no longer interested in the agricultural sector, and that discovery of oil diminished their value to the Libyan economy. In addition, farmers were unaware of reasons shaping changes in approach to agricultural policy.	High oil revenues provided an appropriate environment for the financing of all development projects, including agriculture, especially during the nineteen-seventies and early nineteen-eighties when 80% of state revenues came from oil. In the middle of the eighties, oil prices began to fall and had a significant effect on the Libyan economy. Before the discovery of oil, agriculture contributed about 30% to GDP and 70% of the total labour force, while after the oil discovery; it contributed to about 2% to GDP and employed only 5.2% of total labour force in 2007. Contrariwise, the oil sector contributed about 70% of GDP in	Ammani (2011), Stevens (2003), Martin and Subramanian (2003), Gylfason (2006), and McPhail (2008) point out that despite the fact that the discovery of oil brought many benefits, it also created many challenges e.g. 1) impact on the Exchange Rate (RER). 2) Drop in productivity in the non-tradable sectors. Ammani (2011), Omeje (2006) and WB (2009) suggest that the discovery of oil in Nigeria and Ghana created administrative and financial corruption and led to political dictatorships. Barnett and Ossowski (2003): The main challenge of oil discovery is the difficulty of predicting the high unstable oil price revenues.	The findings conflict with Ammani (2011), Stevens (2003), Martin and Subramanian (2003), Gylfason (2006), and McPhail (2008): where the impact of oil discovery on other sectors in Libya, in the manner touched upon, is not possible because there are no effective sectors that can be affected by exchange rate change where oil exports represent about 95% of the total exports, such as in Libya. The findings coincide with Barnett and Ossowski (2003) in terms of the difficulty in predicting global oil prices and the flow of revenue. The findings also agree with Ammani (2011) and Omeje (2006), in terms of financial flows from oil revenues leading to the creation of a dictatorship regime which controlled Libyan oil capital for 42 years.

Key issues from the literature (including the study's scope)	Evidence from the stakeholder survey – policy makers (government ministry/ agencies in Libya)	Evidence from the stakeholder survey – policy receivers / implementers (farmers in Libya)	Evidence from the Libyan's document search and analysis	The findings of literature review	Critical assessment of the findings
The impact of changing agricultural policy approaches on the performance at the farm level	70% of policy-makers indicated that funding, support and pricing policies were not sufficient, especially in the annual approach. They referred to the drop in oil prices which was the only source of finance for development plans. 30% stated that oil revenues impacted negatively on providing suitable support and subsidy policies in the second approach.	100% pointed out that the funding, subsidy, and pricing policy during the medium-term approach were very effective e.g.1) agricultural lands 2) machinery, fertilizer, seed and pesticide at subsidized prices 3) Cooperative society services 4) Pricing policy. 100% of farmers indicated that the absence of these policies in the second period 1986-2007 led to poor farm performance.	Unlike the second period, the first period was more effective in improving agricultural performance through the development of agricultural resources and improvements to the contribution of the agricultural sector to the Libyan economy. The absence of those policies led to the number of workers falling from 20% of total labour force in 1985 to 5.2% of total labour force in 2007, and the contribution of agricultural sector to the GDP decreasing to about 3%. Agricultural allocations decreased from 12.5% in 1985 to 1.6% in 2007.	Krueger et al. (1991) and Binswanger and Deininger (1997) stated that the absence of funding, support and pricing policies is the main reason for the failure of agricultural policies in developing countries. In reference to other regions, EU (2008) pointed out that the reason for the success of the CAP in the EU countries is the direct subsidy payment for crops and land, which may be cultivated with price support mechanisms. WB (2007a) and Brooks (2010) stated that Asian countries have focused on improving the productivities of agricultural labour and land through subsidies and support policies which have had a positive impact on the agricultural sector.	The findings completely accord with those of Krueger et al. (1991); Binswanger and Deininger (1997); WB (2007a) and EU (2008): where support, funding, subsidy and pricing policies are considered a critical factor in the effectiveness of performance at farm level. This is also the reason for the failure of the second policy approach.

Key issues from the literature (including the study's scope)	Evidence from the stakeholder survey – policy makers (government ministry/agencies in Libya)	Evidence from the stakeholder survey – policy receivers / implementers (farmers in Libya)	Evidence from the Libyan's document search and analysis	The findings of literature review	Critical assessment of the findings
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Key issues from the literature (including the study's scope)	Evidence from the stakeholder survey – policy makers (government ministry/ agencies in Libya)	Evidence from the stakeholder survey – policy receivers / implementers (farmers in Libya)	Evidence from the Libyan's document search and analysis	The findings of literature review	Critical assessment of the findings	
Mechanism of agricultural decision-making and the position of farmers	50% of policymakers indicated that decision making was based on available data - despite the difficulty of collecting data; 25% of respondents pointed out that decisions taken are often based on their experience; 25% indicated that the decisions were taken as a result of instructions from higher ranking government officials. Also, 80% of participants stated that there was confusion and ambiguity about who had the final authority in decision making, namely, which official	100% of interviewees and 96% of questionnaire respondents did not participate in decision-making.	Information about the decision-making mechanism in the Libyan documents is very scarce, in all probability due to the sensitive relationship between agricultural policy and public policy.	WB (2011), Green 2008, Narayan (2009) suggested that the illiteracy and poor education of farmers lies behind the absence of farmers from decision-making. In addition, there is lack of clear vision enabling farmers to engage in policy-making processes. Jamison and Lau (since 1982) and Rogers (2003) cite a lack of investment in the education of farmers and poor advisory services as the reason for farmers' absence from the decision-making process, in most countries of Africa. In contrast, Swinnen (2010) and Birner and Resnick (2005) noted that the nature of the political regime created distortions in the decision-	The findings agree with WB (2011), Green (2008) and Narayan (2009) in terms of the importance of participation of farmers in decision making. Conversely, the findings disagree with them and with Jamison, Lau (since 1982) and Rogers (2003) where they state that the poor education of farmers is the reason for the their lack of participation; this is not consistent with the research findings: 66% of farmers are educated and 60% of them have more than 30 years' experience. The findings also agree with Swinnen (2010) and Birner and Resnick (2005) in terms of the nature of the political regime, which may create distortions in the decision-making process. This is referred to by 25% of decision makers as some decisions are handed down by higher authorities and not discussed by decision-making committees. 80% of them believe that the overlap between authorities is one of the main challenges facing the decision making process for	

and which section held the power.

making process and created powerful interest groups that served their own interests, which conflicted with economic and development policies. FAO (2004); WB (2008); and Van Donge et al. (2012) noted that in addition to farmers, sector officials, local and international institutions and organizations, private sector, companies and civil society were key stakeholders in the agricultural sector, and should consequently be involved in policy making.

agriculture in Libya.

In view of Libyan farmers' high levels of education and extensive experience, there should be no difficulty in engaging them in the decision-making process, and thereby empowering them. Furthermore, in contrast to other countries, where stakeholders constitute a diverse body (such as sector officials, local and international institutions and organizations, private sector, companies and civil society) in Libya this body is composed solely of decision-makers and farmers. (FAO, 2004; WB, 2008; Van Donge et al. 2012).

Key issues from the literature (including the study's scope)	Evidence from the stakeholder survey – policy makers (government ministry/ agencies in Libya)	Evidence from the stakeholder survey – policy receivers / implementers (farmers in Libya)	Evidence from the Libyan's document search and analysis	The findings of literature review	Critical assessment of the findings
Stakeholder evaluation of agricultural policy approaches in Libya	55% of policy makers stated that the second approach did not promote the role of agriculture in development. 70% of policy makers pointed out that the second approach did not support the agricultural sector, was inadequate and did not meet the needs of farmers. 100% of policy makers agree that the absence of appropriate findings and support policies are the main drawbacks of the second approach	100% of farmers claim that the absence of agricultural policies in the fields of pricing, marketing, financing, and subsidy led to the poor performance of their farms. Production equation at farm level depended on fertilisers more than any other factor. The correlation coefficient between fertiliser and production is high, amounting to 63%, while the correlation coefficient between policy and production is negative and amounting to - 0.03%.	The agricultural sector has seen a decline in agricultural labour, falling to about 5.2% of the total labour force, while it had stood at 20% in 1985. Decline the agricultural investment from 18.4% of the total investment over the period of 1973-1985 to about 7.6% during the period of annual plans Decline the contribution of agriculture to GDP from about 7% in the first period to about 2.5% during the second approach. The Cobb Douglas function is characterised by a decreased return to scale during the second period and an increased return to	According to GPCT (1996), El Messallati (2007) and AOAD (1990) during the first approach, support and subsidy policies included fertilizers, feed, and equipment. For example, beekeeping equipment was supported by 80%, pesticides by 60% and agricultural machinery by 50% for cooperative associations and 25% for individuals. The support also covered the extension of power lines and water projects and railway lines, subsidized by 50%. The total amount of subsidies during 1970-1980 was estimated at about 165 M.LY D. These subsidies sought to encourage farmers to adopt modern agriculture practices. According to Abdulgader (2005), El Messallati (2007) and El Shiakhi (2009), as a result of the pricing policies implemented in the nineteen-seventies and nineteen-eighties, the areas under cultivation and production saw a remarkable increase. While in the second approach, cultivation and production	The research findings agree with GPCT (1996), El Messallati (2007) and AOAD (1990) in that support, funding and subsidy policies are important and influential between the two policies approaches, The results also agree with what has been suggested by Abdulgader (2005), El Messallati, (2007) and El Shiakhi (2009) with regard to pricing policies in the medium-term approach, which led to an increase in the cultivated area and production. On the other hand, the research findings regarding annual plans conflicted with AOAD (2008) and El Messallati (2007) where they stated that, during the annual approach, Libya implemented crop structure policies to reduce the

		The main drawbacks of the second approach according to farmers view are 1) poor infrastructure 2) poor market conditions 3) the absence of a role for cooperative societies and the private sector 4) decline in the state's interest in the agricultural sector and its attention to other more profitable sectors.	scale in the first approach. Libya suffered from a deficit in its trade balance during the two approaches; however, the deficit was greater during the second period.	decreased due to the absence of pricing policies during the period. AOAD (2008) and El Messallati (2007) indicated that Libya aimed to reduce the differences in production costs in different agricultural areas by means of its crop structure policies during the period 1986-2007	differences of production costs between regions. This was contested and denied by 96% of farmers who, they indicated, are choosing cash crops to get high profit margins and to ensure appropriate agricultural income; it has even forced them to use agricultural land for non-agricultural activities, to ensure returns that enable an adequate standard of living.
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